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Kevin W. McPherson

Computerworld's annual skills surveys provide insight for IT marketers

Computerworld, Inc.'s Professional Development Division -- offering IT employers a portfolio of opportunities to attract the brightest IS talent

inside front cover

Exploring the Intranet agenda with Computerworld's Intr@net '96 Conference

inside back cover

Computerworld's Skills Surveys A Good Source of Information for IS Employers and IT Marketers.

A stepped up move toward enterprise-wide IT use and the explosion of Internet-related technology developments, coupled with a stronger economy in the late '90s has IS executives on the hunt for the best talent in areas such as object-oriented programming, software development, client/server development and networking. The growth of the corporate intranet and electronic commerce will demand even more IS skill sets. Each week *Computerworld*'s Computer Careers section advertises hundreds of jobs, underscoring this urgent need for skills in the IT marketplace.

The Computerworld Skills Surveys

Last summer, surveys conducted by both our editorial department and our Professional Development Division across the *Computerworld* audience provided some interesting guideposts to IT development in Corporate America.

Results from our editorial department's 1995 skills survey formed the basis for a special report in the November 13 issue of *Computerworld*, "Good Help Gets Hard to Find." Highlights from the editorial survey included:

- **the value companies place on certain technologies** as seen in the survey's Top 20 Hottest Skills list — SAP led that list, with companies willing to pay SAP programmers 17.1% higher salaries on average than their IS departmental colleagues.
- **where are skills in highest demand?** In the 1995 survey the South, particularly the West South Central region, led the nation in demand for database skills, languages and development tools.
- **what industries have a high demand** for a particular skill? Looking at SAP-certified consultants, the survey found top 5 industries placing a high premium on this skill were: government, finance, education, computer and healthcare.

Management: Special Report

SKILLS SURVEY

GOOD HELP GETS

IS managers face one of the most serious skills shortages in recent memory. What are the options?

By Brian McWilliams

The Top 20 hottest skills

SKILLS SURVEY

HARDER TO FIND

SAP Shortage: No relief in sight

Who's paying the highest SAP premiums?

Today, how many SAP-certified consultants do you have worldwide?

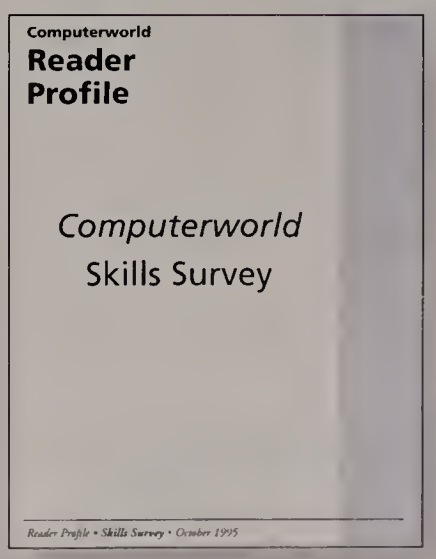
Skills Among the Computerworld Audience

In July 1995, a second skills survey was also conducted across a random sample of 2,000 *Computerworld* subscribers with IS management titles. Measuring specific computer-related experience and skills, the survey also looked at our readership's skill involvement in select emerging technologies. A survey of this type can add to the critical information mix marketers need to identify target audiences.

Significant portions of our readership possess skill sets in young or emerging technology areas such as: software development (72%); the Internet (42%); object-oriented design and programming (33%); and client/server 57%.
The survey also details our subscribers' skills in the technology areas having a major impact on market dynamics:

- Operating systems
- Network/Communications
- Programming languages, GUIs & Utilities
- Groupware/E-mail
- DBMS
- Applications Development/CASE Tools
- Local-area Networks
- Financial applications software

Computerworld has made a substantial investment in both these skills surveys and will continue them on an annual basis. The data from these surveys can be an excellent resource tool for marketers and their agencies in learning more about the characteristics of our readership.



To obtain more information on these surveys, contact your Computerworld sales representative.

Newspaper

COMPUTERWORLD
Everything you need to know.

Turn to the inside cover to find out more about Computerworld's Professional Development Division.

COMPUTERWORLD

Professional Development

Providing a comprehensive portfolio of career enhancing resources.

Computerworld Brings Employers and IT Candidates Together

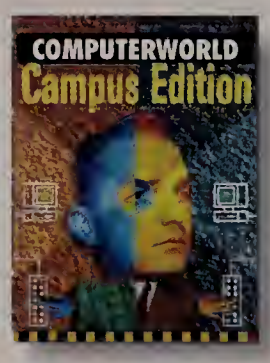
The proliferation of new information technologies is both an opportunity and a challenge. While IT management applies new tools to the enterprise, they are also faced with keeping staff on the required skills curve. Rare is the company that isn't wrestling daily with the costs of IT recruiting and staffing.

That's where Computerworld, Inc.'s Professional Development Division can help. Our team goes far beyond just providing a resource to reach our readership of over 768,000 IT professionals every Monday. We also works continuously with IT organizations to deal with this cost-effectively by:

- determining what specific needs they have
- what the skills market offers
- and – most importantly – how to develop a marketing program tailored to reach targeted skill sets.

For example, a recommended program might include a recruitment advertising campaign in *Computerworld* that capitalizes on key, strategic editorial and show distribution opportunities. Depending on needs, it might also include image advertising in *Computerworld*'s bi-monthly *Computerworld Client/Server Journal* and annual *Best Places to Work* magazines. And to locate sharp, entry-level talent, it might also include advertising in *Computerworld*'s annual *Campus Edition* to reach top graduating students.

Once a print campaign is established, the groundwork is set to complement it with a presence on Computerworld Inc.'s careers site on the Internet.



Providing Round-the-clock Opportunities

Computerworld's itCareers site on the World Wide Web lets qualified candidates register their skills profile – and then e-mails them with a new feature called CareerMail when a matching career from a participating employer is posted on the site. Because of this, talented professionals can leave word of their interests on the site. This then allows them to quickly and selectively respond to just the opportunities of interest. This feature specifically addresses any important concerns a talented professional may have about traditional methods of blanketing the market with resumes. For employers, it's yet another way Computerworld brings them closer to top talent.

Recruitment advertisers in *Computerworld Inc.*'s print products (*Computerworld* the weekly newspaper, *Computerworld Client/Server Journal*, *Best Places to Work* magazine, and *Campus Edition*) may qualify to participate in this special opportunity.

Educating Companies on Recruiting and staffing

This June, over 300 technical recruiters from hiring corporations nationwide will convene at the Inverness Conference Center and Resort in Colorado for Computerworld's fifth annual Corporate Technical Recruiting Conference. At this proven event, recruiters will compare strategies and learn the latest in what works for the near- and long-term future.

New this fall will be one-day regional conferences including:

- Washington D.C.-area Corporate Technical Recruiting Conference
  September 16, 1996
- New England Corporate Technical Recruiting Conference
  October 7, 1996
- San Francisco Bay Area Corporate Technical Recruiting Conference
  November 4, 1996

Delivering Results

Whatever your IT career and hiring needs, Computerworld's Professional Development Division provides the tools to give you results.

To learn more about how Computerworld, Inc.'s Professional Development Division, contact:

John Corrigan,
Vice President and General Manager,
Professional Development Division

Phone: (800) 343-6474, x8273
Internet: john_corrigan@cw.com

Are your customers attending Computerworld's Intr@net '96 Conference? Turn to the inside back cover for more details. ▶

The Newspaper of Information Systems Management
May 20, 1996, Vol. 30, No. 21, 139 Pages, $6/Copy, $48/Year

COMPUTERWORLD

You need CHAOS
• Leadership Series •
COMPUTERWORLD
follows page 96

What's so *funny* about IS?

Scott Adams bashes managers, techies and workplace afflictions in *The Dilbert Principle*. MANAGING, page 80
Dave Barry swears his computer is laughing at him. You will too when you check out these interviews. IN DEPTH, page 96 and www.computerworld.com, COMPUTERWORLD

GM CIO may need shock absorbers

By Robert L. Scheier and Thomas Hoffman

Wanted: CIO for Big Three automaker to play good cop with internal users, bad cop with outsourcers. Good political skills needed to coordinate $3.9 billion in worldwide IS spending without turf wars. Must manage tricky relationship with key outsourcer that is being spun off into separate company. Pragmatists only, please. Contact: General Motors Corp.

Now the only problem is finding someone to take on what could be an exceptionally messy job, even by IS standards.

Balance of power
Approximately 14,000 EDS employees provide information services to GM, compared with about 100 IS employees within the automaker itself.

Managing internal GM politics and the relationship with outsourcer Electronic Data Systems Corp. with less money and organizational clout than the typical chief information officer "is going to require a real smooth character," said Tim Bourgeois, a senior analyst at International Data Corp. in Framingham, Mass.

Bourgeois claimed GM is having a hard time filling the job because the position "isn't terribly attractive."

GM spokeswoman Toni Simonetti wouldn't comment on the progress of the search. However, GM's requirements hint at the pressures the

General Motors, *page 125*

'net box specs nailed

Key vendors support Internet device; questions linger

By Dan Richman
SAN FRANCISCO

Five key vendors today will announce specifications for the Network Computer, a $500 diskless Internet-access device.

Some pundits said this is the kick the fledgling technology needs, but users are split on whether the NC will be useless or essential to their businesses.

Oracle Corp., IBM, Sun Microsystems, Inc., Apple Computer, Inc. and Netscape Communications Corp. are expected to support the NC Reference Profile. The specification is "intended to guarantee that if a platform meets it, any compliant application will run on [it]," said Eric Schmidt, Sun's chief technology officer and an author of the spec.

He likened it to the branding on PCs and commercial software that indicates Windows compatibility.

The NC Reference Profile will specify a list of World Wide Web and Internet protocols, along with required Java classes. Only Java applications can be used on the NC, Schmidt said.

The companies will also release a list of about 20 vendors that will manufacture NCs.

User reaction to the new breed of machine was mixed.

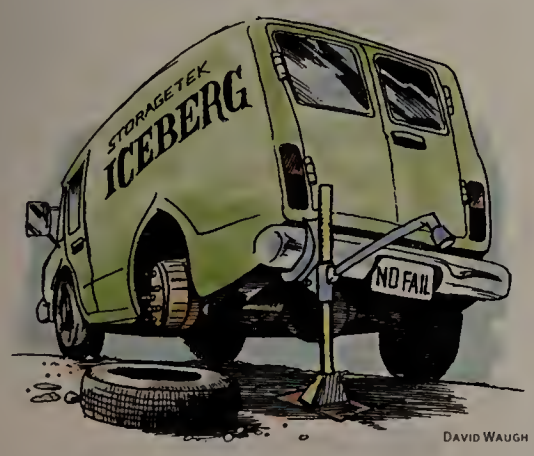
"There are a few reasons we won't bring the NC in-house right now," said Steve Lark,

'net box specs, *page 125*

WHAT'S INSIDE

- IBM this summer will introduce a distributed security framework that will bring enterprise single sign-on capabilities closer to reality. **See story, page 4,** *by Craig Stedman.*
- J. P. Morgan teams up with four vendors in an outsourcing pact that spreads risks and rewards among all partners. **See story, page 10,** *by Thomas Hoffman.*
- Struggling ATM falls under tough user scrutiny. **See stories, page 12,** *by Bob Wallace and Kim Girard.*

- Corporate issues were conspicuously absent from Apple Chairman and CEO Gilbert Amelio's turnaround plan. Apple's product road map includes another go at a technology alliance with IBM. **See stories, pages 14 and 15,** *by Lisa Picarille and Mindy Blodgett.*



While the crash of the fault-tolerant system appears to be an isolated event, StorageTek users "should demand the results of the root-cause analysis to ensure that this type of outage will not occur at their location."

—John McArthur, IDC analyst

Iceberg meltdown slips up Registry

By Michael Goldberg

Massachusetts residents gripe about their Registry of Motor Vehicles as a matter of citizenship, akin to expecting a Red Sox loss.

So officials working to improve the Registry's image took it on the chin when a supposedly fault-tolerant storage system failed just as peak activity began on a recent Friday.

The failure, which occurred in a new Storage Technology Corp. Iceberg disk array at the registry's new data center in Chelsea, Mass., left the agency and its customers without data access for about 15 hours (see chart, page 16).

"We're part of an organization that is trying very hard to change the way we offer service to the public, and obviously, without our computer, we're dead. This was a major catastrophe," said Deputy Registrar David Lewis, the agency's MIS

Iceberg melts, *page 16*

Newspaper

A PUBLICATION OF IDG

Inside Computerworld

May 20, 1996

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Many questions have arisen about the definition of an intranet. Here's one answer from a New Age . . . er, new breed consultant, Charles Babcock reports.

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Internaut

Meet Marty DiBattista,
Internet surfer dude. He's a long way from where he started at Lockheed.

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Banking's hot, retail's not

Financial institutions are burning up the technology trail, while retailers are barely touching the stuff

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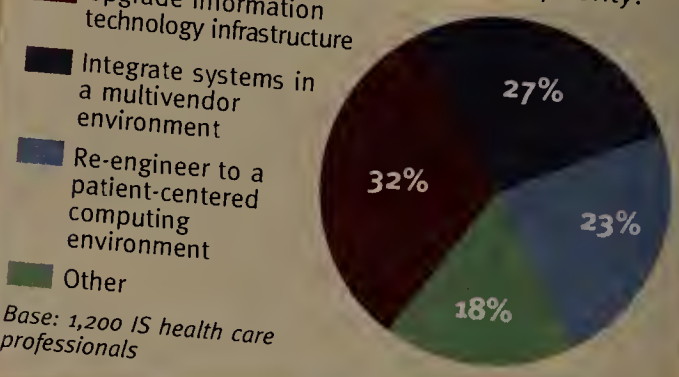
What is your most important IS priority?



Base: 1,200 IS health care professionals

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a.t.cW

Ingenuity pays off

He came up with the Wedgie — a trademarked bicycle seat lock — multilayered diskette labels and the world's smallest keyboard with full-size keys. Now, MIT graduate student David Levy is this year's recipient of the $30,000 Lemelson-MIT prize for student innovation. Levy has four patents and eight pending and a knack for getting corporate sponsors. 3M and BASF sell the multilayered labels as Peelables — users neatly peel off an old label to reveal a fresh one underneath — and AT&T reportedly is interested in the credit-card-size keypad for the next generation of handheld electronic devices.

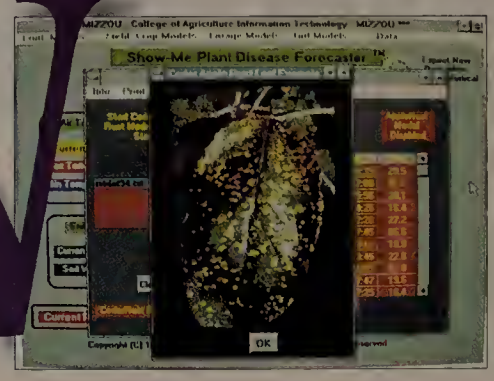
Rust Belt PCs go upscale

No, this isn't a PC with a hand crank. ErgoTouch 3000 from Dynapro Technologies in New Westminster, British Columbia, is an industrial-grade PC with a quick-access door for upgrading chips and boards inside. The PC — which is 4¼ inches deep — is meant to be placed in hazardous factory locations. The units are sealed on all sides to withstand hosedowns and keep out dust and other contaminants. It costs $11,645 and will ship in June.

News to ponder

The U.S. Food and Drug Administration has approved a high-capacity version of the Yellow IRIS urinalysis workstation from International Remote Imaging Systems in Chatsworth, Calif. The vendor claims model 900UDx "is the first fully automated, walkaway system for performing complete urinalytical profiles, including microscopy of every specimen." The workstation integrates the Super Urine Analyzer that reads urine test strips with Automated Intelligent Microscopy, which displays full-color images.

Send contributions of offbeat news, lists and anecdotes to mbetts@cw.com.



Researchers at the University of Missouri-Columbia have developed the Show-Me Plant Disease Forecasting System, a PC software program and weather station. It detects the weather conditions that make plants vulnerable to insects and diseases such as apple rot, sooty blotch and wheat scab. This allows farmers to spray pesticides only when weather conditions are ripe for an infestation instead of all the time.

Digital Frontiers

Having a "chip on your shoulder" may be literally true in the future. It already is for some pets.

For several years, animal shelters and pet owners implanted microchips the size of a rice grain in their animals and used scanners to find lost or stolen pets. For example, a humane society in San Mateo, Calif., has "chipped" more than 10,000 animals.

The big problem was that different brands of pet identification chips required different scanners, so animal shelters needed several scanners to do a thorough search. But that standards battle ended earlier this year when the major vendors agreed to back a "standard universal scanner" with software that can read all chips sold in the U.S.

The notion of "chipping" humans gives privacy advocates the heebie-jeebies. Possible uses include finding lost or kidnapped children and monitoring criminals. "There could be lots of altruistic reasons to do it, but there's still the potential for [unwarranted] surveillance," says Evan Hendricks, editor of "Privacy Times," a newsletter in Washington.

— Mitch Betts

Slip your favorite CD-ROMs *into something more comfortable. Kensington Microware in San Mateo, Calif., has unveiled the CD Wetsuit line of circular carrying cases. The cases are made of the same squishy, nonslip fabric used in divers' wet suits and have soft cloth liners. They cost $9.95.*

IBM to offer single sign-on

By Craig Stedman

Trying to meet user demands for simpler access to distributed systems, IBM this summer will introduce security software that begins to make single sign-on capability less of a pipe dream.

IBM's offering will let end users with the proper authorization log in once and gain access to systems, including mainframes, database servers and file and print engines, sources said.

Information systems managers familiar with IBM's plans said this appears to be the furthest step any vendor has taken toward a comprehensive single sign-on capability.

"This is the way we want to go, but nothing happens overnight," said Peter Barclay, manager of client/server services at Caterpillar, Inc.

The construction equipment maker's users and dealers must enter multiple IDs and passwords to access different systems. "It can be very frustrating," Barclay explained. "You have to know a certain level of navigation around Caterpillar to even use all of the systems."

Passwords for IBM's single sign-on product will be controlled by the Kerberos authentication mechanism used in the Open Group's Distributed Computing Environment.

Pricing for the software isn't available yet, and the product will have some holes at first. For example, IBM confirmed that Microsoft Corp. Windows NT file and print servers may not be supported in the first release. Windows 3.1 clients and IBM's AS/400 and OpenVMS systems are also out in the cold for now.

"It's not reasonable to expect that you're going to get a silver bullet on the first shot," said Mike Guidry, a project manager at Phillips Petroleum Co. in Bartlesville, Okla.

This week in

COMPUTERWORLD

■ **Dave Barry on technology**
"I don't know what RAM is, but I know I need a lot," says one of America's funniest columnists. Read the full interview online.

■ **Whiteboard forum**
Computerworld excerpts tips from "Dilbert" cartoonist Scott Adams' new book on management. Join *Computerworld* in a whiteboard forum to discuss your company's management gems.

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Will NT 4.0 elbow out Win 95 on desktop?

By Laura DiDio

Nine months after one of the most hyped product introductions ever, Windows 95 may be getting some stiff competition from Windows NT Workstation. The most recent reports from analysts and users indicate that after it ships in September, NT 4.0 may leapfrog older sibling Windows 95 onto user desktops.

Dataquest statistics show that Microsoft Corp. sold 18 million copies of Windows 95 last year, but so far, most of the 200 million Windows 3.x users have stayed with the older operating system, warily eying upgrade options. Windows NT 4.0 is expected to change all that.

Momentum has been building for NT Server, but it now looks as if NT Workstation will grab significant market share as well. Dataquest, a market research firm in San Jose, Calif., estimated that unit shipments for Windows NT Workstation will reach $25 million next year.

In some cases, NT Workstation is piggybacking on the burgeoning popularity of its server sibling. That is one of several reasons Scott Rackliffe, vice president of information systems at Farm Credit Financial Partners, Inc. in Agawam, Mass., chose it over Windows 95.

"We're already using our fourth release of NT Server. NT Workstation is just a smaller version of the server software, so there's no real learning curve," Rackliffe said. "The Windows 95 GUI is pretty, but we need the industrial strength of NT Workstation."

The big lure of Windows NT Workstation 4.0 is its powerful 32-bit operating system, which includes multitasking, multiprocessing and fault-tolerant capabilities that make it ideal for supporting mission-critical applications, users and analysts said.

For example, Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said when problems occur in applications running on Windows 95, they can crash the entire operating system. But "the built-in fault tolerance in NT Workstation provides users with a safety net, ensuring that their systems don't go down."

NT Workstation's fault tolerance can literally save lives, claimed Corey Eaves, manufacturing systems product manager at Intellution, a division of Emerson Electric Corp. in Norwood, Mass. "If a Windows 95 system crashed while communicating with a chemical reactor for instance ... you could have a potentially deadly situation on your hands. For us, NT Workstation wasn't an option; it was the only choice," he said.

Dan Ramos, chief architect at Visteon Corp. in Maitland, Fla., which develops customized applications for health care organizations, scoffed at reports of problems running 16-bit legacy applications on NT Workstation and said they are largely unfounded. "I've found very few applications that won't run on NT workstations," he said.

Other corporate users are moving to NT Workstation for more pragmatic reasons, not the least of which is Microsoft's stance that Windows 95 is an interim solution, whereas NT Workstation is its strategic operating system.

But moving to NT will be no cakewalk. Analysts such as Enderle and First Albany Corp.'s Laura Hanny advise caution. The following top the list of NT Workstation drawbacks:

- A lack of backward compatibility with some 16-bit applications, mainly fax gateways.
- The more expensive cost to upgrade memory or replace PCs.
- A short battery lifespan for NT 4.0-based Pentium notebooks.

That's why some users, such as Bruce Smith, systems administrator at Logicon Communication Technology, Inc., a Department of Defense subcontractor in Arlington, Va., said they will confine their NT Workstation 4.0 upgrades to power users for now and migrate the majority of their Windows for Workgroup users to Windows 95.

Windows migration costs

Upgrading from	To	Price	Includes
Windows 3.x or Windows for Workgroups	Windows 95	$500 per desktop (average)	Hardware and operating systems
Windows 3.x	Windows NT Workstation	$1,000 to $2,000 per desktop	Memory upgrade, operating system and possible replacement of the PC to accommodate video and specific hardware drivers

Source: Giga Information Group, Inc., Santa Clara, Calif.

HP to Netscape: Lean on me

Internet firm seeks better service, corporate market access

By Kim S. Nash

Hewlett-Packard Co. and Netscape Communications Corp. last week announced a product and support pact that could push Internet technology into corporate systems and calm anxieties among some Netscape users unhappy with the service they have received.

Some critics, such as HP rival Sun Microsystems, Inc., said the vendors were simply showboating and that the HP/Netscape pact was just another in an industry where alliances materialize daily.

Netscape CEO Jim Barksdale said the deal isn't an exclusive one. He said the company turned to HP because Sun, Silicon Graphics, Inc. and other Netscape resellers "do not yet have the breadth of relationships with [large corporate] accounts that HP has."

Plus, unlike those vendors, HP supports both Unix and Windows NT, Barksdale added.

Some users and analysts said the pair could be a force in pushing Internet concepts into mainstream information systems.

"HP is well-regarded among IS managers, and now Netscape will be able to ride on those coattails to bring the Internet message home to these people," said Michael Karlin, president and chief operating officer of Security First Network Bank. Security First is based in Atlanta and does business only on the Internet.

That is precisely the plan, Barksdale said. "We need big brothers."

Palo Alto, Calif.-based HP and Netscape in Mountain View., Calif., plan to start delivering integrated products by year's end.

For example, users of HP's OpenMail electronic-mail package will be able to exchange messages and directories with users of Netscape's Mail Server. Also, HP's OpenView systems management utility will be able to monitor and manipulate Netscape World Wide Web servers.

But product promises aren't as important as plans HP and Netscape have for customer service, some observers said.

Netscape users who are dissatisfied with customer service hope HP's experience will help.

"Their organization seems more mature than Netscape's," said one Netscape and HP user in Kentucky, who asked to remain anonymous. "[Service] quality may well go up."

HP will support Netscape users who buy Web software from HP; Netscape will continue to support those users who buy directly from it.

"HP has a seasoned support group very well known for good service," said John Logan, an analyst at Aberdeen Group, Inc. in Boston.

But the HP/Netscape combination stands to help more users because HP's OpenView has a bigger installed base, according to International Data Corp. in Framingham, Mass.

Help or hindrance?

HP's offer of technical support to Netscape users met both praise and skepticism

Thumbs up

HP is well-regarded among IS groups for top-notch customer service; may help relieve some burden from fast-growing Netscape.

Thumbs down

HP doesn't know Netscape products as well as Netscape; HP as middleman might frustrate some users.

Pentium bumps up to 200-MHz limit

By Bob Francis

Companies that have standardized on Intel Corp.'s Pentium processor for their desktop PCs will get a power boost June 10, when the company announces the 200-MHz version.

The usual gang of systems vendors — Dell Computer Corp., IBM PC Co., Hewlett-Packard Co. and Gateway 2000, Inc. — will demonstrate systems that use the souped-up processor.

Unisys Corp. demonstrated the 200-MHz Pentium when it introduced its Aquanta PCs last week.

But the new chip may well be the last of the traditional Pentiums to be announced because 200 MHz is the upper limit of the chips' design.

Many PC users don't need such high-powered desktops, but the 200-MHz chips provide more options for power-hungry users. "We've been buying Pentium systems for some time, and we'll migrate to the higher-speed chips, I'm sure," said Phil Roszak, an information systems consultant at Alliant Foodservice, Inc. in Phoenix.

But it may take some time to migrate corporate desktop users to the 200-MHz chip. "We do quite a bit of testing before we begin general purchase of new technologies," he said.

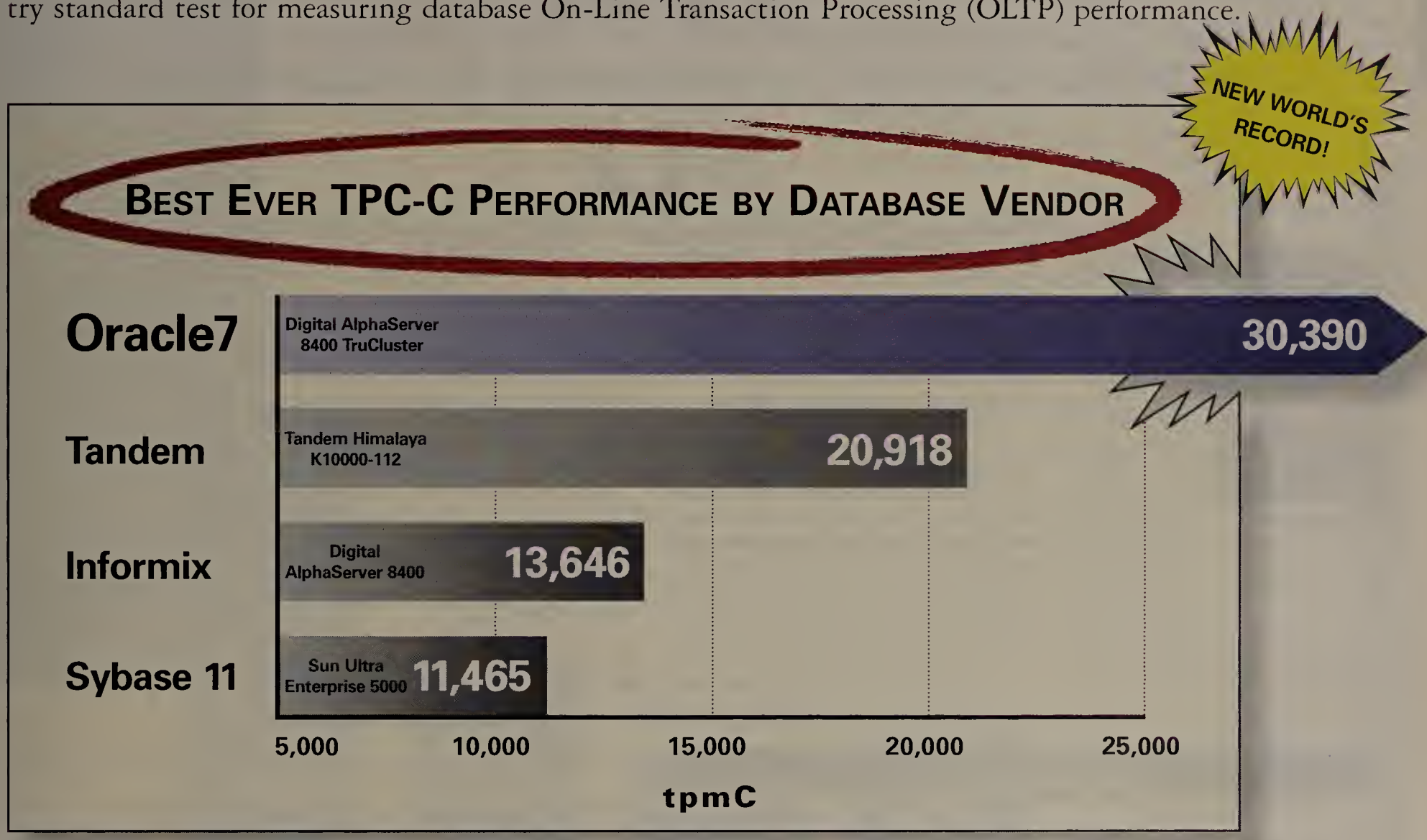
The chip will cost between $500 and $600. Systems that sport the new processor will cost about $2,500 for an average desktop PC, said Dean McCarron, an analyst at Mercury Research, Inc. in Scottsdale, Ariz.

The fast-changing PC market frustrates users. See page 42.

How do you define an intranet? See page 126.

Oracle7 Parallel Server: Safe at any Speed

Oracle7 Parallel Server™ breaks Tandem's TPC-C world record! The TPC-C benchmark is the industry standard test for measuring database On-Line Transaction Processing (OLTP) performance.



"Oracle has a superb solution for enterprise-class OLTP. They have literally achieved results we only dreamed of a few years ago."—**Peter Kastner, Vice President, Aberdeen Group**

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©1996 Oracle Corporation. Oracle is a registered trademark, and Oracle7 Parallel Server and Enabling the Information Age are trademarks of Oracle Corporation. All rights reserved. TPC-C results as of April 17, 1996. TPC is a registered trademark of the Transaction Processing Performance Council. Oracle on Digital AlphaServer 8400 TruCluster configuration, four systems with 8 CPUs each 30,390 tpmC at $305/tpmC. Tandem on Tandem Himalaya K10000-112 system with 112 CPUs 20,918 tpmC at $1,151 tpmC. Informix on Digital AlphaServer 8400 system with 10 CPUs 13,646 tpmC at $277/tpmC. Sybase on Sun Ultra Enterprise 5000 system with 12 CPUs 11,465 tpmC at $191 tpmC. All other company and product names are trademarks of their respective owners.

'net commerce gets boost

By Mitch Wagner

Internet commerce is getting a much-needed shot of credibility, as two well-respected personal finance companies open customer accounts to 'net access.

Wells Fargo & Co. last week said it will let customers transfer funds between accounts online. Customers can transfer funds between checking, savings, line-of-credit and other accounts by accessing Wells Fargo Bank at http://wellsfargo.com/. Online bill-paying options will follow, possibly by early July.

Meanwhile, AT&T Corp. is testing Internet access that would let customers check balances for their Universal credit cards, *Computerworld* has learned.

Wells Fargo's Gailyn Johnson: *'The Internet is the cheapest way' to access accounts by PC*

AT&T next month plans to announce Internet access to its Universal Card accounts. By year's end, the firm will let consumers pay their credit-card bills online using "electronic checking" technology, in which customers can access their accounts online and transfer funds to AT&T. The Universal Card is at http://www.att.com/ucs.

The Wells Fargo and AT&T technologies are good news for Internet commerce boosters, who have lately weathered reports of "Internet backlash" and "Internet meltdown" caused by slow response times and security holes.

"It legitimizes the business, just like IBM getting into PCs did more than 10 years ago," said Joel Maloff, president of The Maloff Co. in Dexter, Mich.

Customers can bank *via Wells Fargo's Web site*

Ease of use

"We believe our customers want to be able to access their accounts through their PCs, and the Internet is the cheapest way to do it," said Gailyn Johnson, senior vice president of online financial services at Wells Fargo. "The Internet is an effective, efficient distribution channel."

The AT&T and Wells Fargo services were implemented by both companies' information systems departments. That is unusual in Internet commerce, where many firms turn to their marketing departments and outside consulting companies that specialize in the Internet. But AT&T and Wells Fargo said they wanted their IS departments involved because the Internet efforts are strategic to their business efforts.

"We understand the business model and can convert it to going online," said Peter Hardin, senior manager of online services at AT&T. He said his department's knowledge of the Universal Card's business practices allowed it to put up a better site faster and less expensively than an outsider would have.

A similar feeling prevailed at Wells Fargo, said Bill Finkelstein, chief scientist at the bank.

The site required some quick changes to reflect customer feedback, which an outsider might not have been willing or able to provide. And Wells Fargo wanted to learn about the Internet on its own, he added.

The technical implementation of the AT&T and Wells Fargo applications are similar. Both rely on Netscape Communications Corp. World Wide Web servers to provide Web service and encryption for security.

Information is passed through a firewall to communicate with bank systems that run account information.

In both cases, account access isn't allowed over the Internet until the customer registers online.

For a look at technology in banking, see page 73.

Software promises more 'net banking

Edify Corp. today will unveil software designed to let banks offer account services to customers over the Internet.

Slated for September delivery, the Edify Electronic Banking System will link back-end financial systems to the Internet, which will let customers check account-balance inquiries and enact funds transfers and bill payments on the Internet.

Banks also will be able to customize World Wide Web pages for individual customers or groups of customers and provide links from a Web page to a bank's telephone system. That would allow users to click on a "Call Me" button and have a bank representative instantly call.

The $195,000 package runs on IBM's OS/2 operating system.

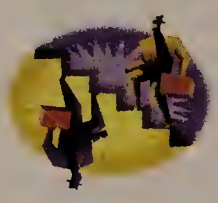
Meanwhile, IBM is launching a coalition with 10 banks to build online banking technology to compete with Microsoft Corp.'s Money and Intuit, Inc.'s Quicken The INET coalition initially will produce a proprietary package that runs on IBM's communications network. Later, the software will be Internet-enabled. Coalition partners include BankAmerica Corp., NationsBank Corp. and Fleet Financial Group, Inc.

— Mitch Wagner

News Shorts

Aetna, Sabre name CIOs

The Sabre Group, which provides information services to American Airlines and the travel industry, named Terry Jones as its first chief information officer. Meanwhile, Thomas T. Schwaninger has joined **Aetna International, Inc.**, the international marketing arm of Aetna, Inc., as vice president and CIO. Schwaninger will be responsible for the delivery of technology services to support Aetna's expansion into Latin America and the Pacific Rim. At Sabre, Jones will guide the planning and development of new technologies; he also will continue to serve as president of Sabre Interactive, the unit that supports the online EasySabre and Internet-based Travelocity consumer reservation services.



Lotus to fix Notes' Mac client

Lotus Development Corp. this week will send out a fix for Notes 4.1 to correct a problem with the Macintosh client for Notes. The Macintosh client thinks Notes replication is corrupt even if it isn't.

Microsoft Web server update

Microsoft Corp.'s World Wide Web server is turning into a set of features that can be activated from within the Windows NT Server operating system. By making its Internet Information Server Web hosting software part of NT Server, Microsoft hopes to ease the setup and trouble-shooting of Web sites for NT users.

Netscape plans Navigator 4.0

Not yet out of the gate with Navigator 3.0, **Netscape Communications Corp.** will ship Release 4.0 of its World Wide Web browser by year's end. The upgrade will include closer ties to Collabra Share, Netscape's workgroup application and improved electronic-mail features, Netscape officials said. Version 3.0 will ship next month.

CA-Unicenter: TNG goes beta

Computer Associates International, Inc. is shipping the beta version of its CA-Unicenter: The Next Generation, which manages the network and the systems attached to the network. The package is expected to be available in September or October, according to company officials. Base pricing will be raised "by no more than one-third" of the $2,500 base price for the current Unicenter package, company officials said.

HP upgrades servers

Hewlett-Packard Co. plans in September to beef up the I/O and memory bandwidth of its high-end Unix servers. The move should prevent the servers from choking on the 64-bit PA-8000 microprocessor that will be added at the same time. Some of the upgrades will require extensive upgrades to the system's backplane; others will need only a board swap. I/O bandwidth will increase fivefold.

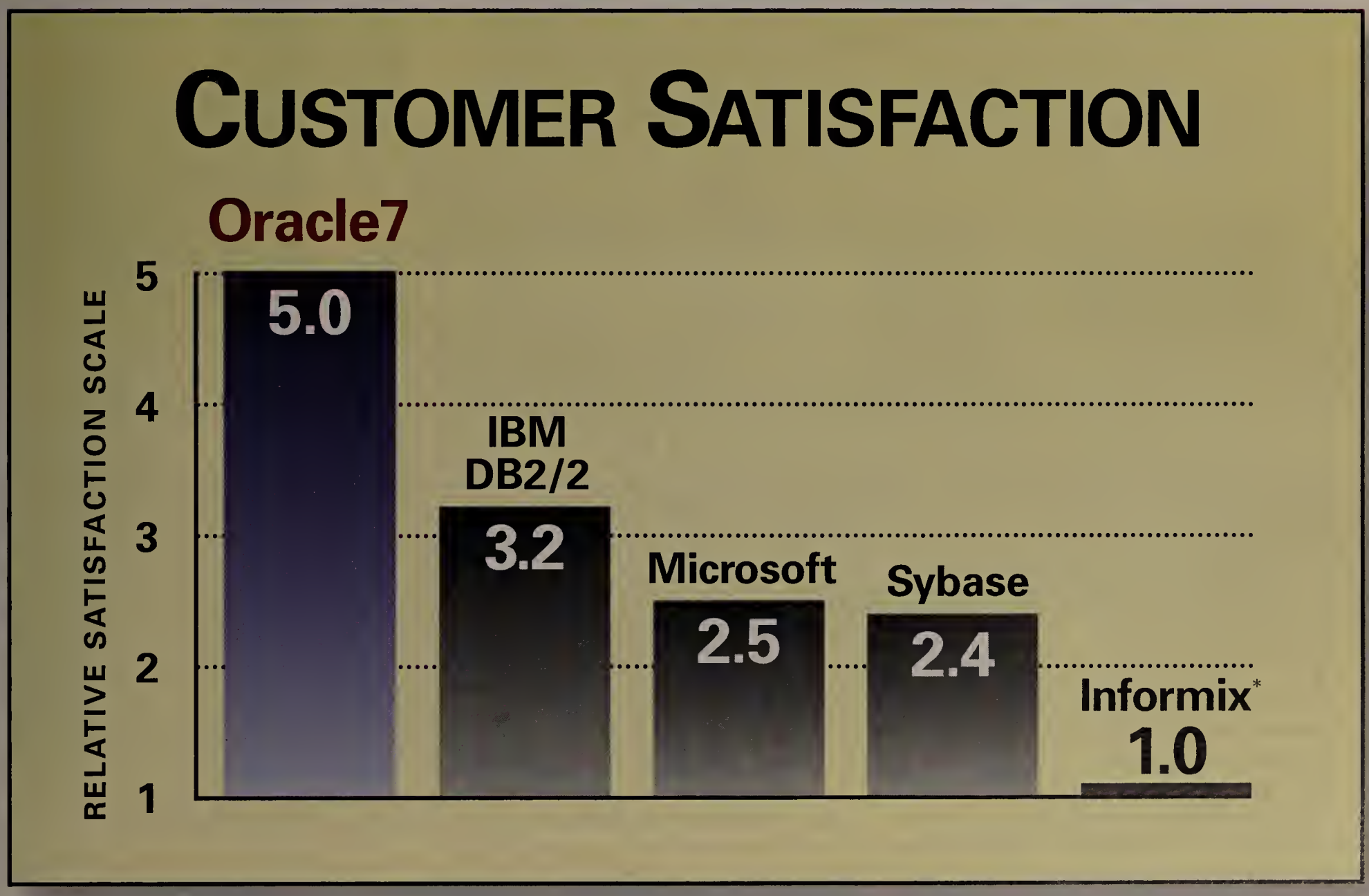
Novell digs in

Novell Inc. is going ahead with its year-old patent infringement suit against **Network Trade Center** (NTC) in Sandy, Utah. NTC several weeks ago released a statement alleging that Novell was backing off its lawsuit and that Novell's lawyers had acknowledged making "incorrect statements" in federal district court. Novell contends NTC is illegally selling NetWare upgrades more cheaply than Novell resellers. "This is costing us millions of dollars in lost revenue," said Ron Barker, a manager in Novell's antipiracy group. The case will be heard in Salt Lake City Federal District Court in August.

SHORT TAKES **Micro Focus Ltd.** last week told customers at its annual user conference in Orlando, Fla., that it will provide Web support throughout its line of PC-based Cobol products. The company also is considering licensing Java, Sun Microsystems, Inc.'s Internet language, so that object-oriented Cobol code could be compiled into Java applets. ... **Information Builders, Inc.** in New York today will announce Focus Fusion, a multidimensional database management system that works with the company's EDA/SQL connectivity software. Prices start at $37,545 for 16 users. ... **Intel Corp.** in Santa Clara, Calif., inked a deal with Lockheed Martin Corp. last week that may result in three-dimensional graphics appearing on PCs by the second half of next year. The deal calls for Intel to jointly develop a 3-D graphics chip with Lockheed's Real3D group, which develops 3-D graphics for the military and flight training market.

Can't Get No Satisfaction? Try Oracle7.

Computerworld asked database users to grade their satisfaction level. In comparison to Microsoft and Sybase users, twice as many Oracle users rated their satisfaction an "A," the highest grade allowed. And, as you would expect, five times as many Oracle users rated their satisfaction an "A" when compared to Informix's ranking.



The prestigious *Computerworld* Buyer's Satisfaction Scorecard concluded, "Oracle7.1 Enterprise Server is far ahead of the competition in...customer satisfaction..." A surveyed Oracle customer said, "In my 20 years of database experience [Oracle7] is by far the cleanest. It practically has no bugs."

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Computerworld survey results as of April 15, 1996. *Informix results based on smaller sampling due to lack of response.

J.P. Morgan to save $50M via outsourcing pact

Unusual deal spreads risk, rewards among partners

By Thomas Hoffman

J. P. Morgan & Co. has entered into a $2 billion outsourcing deal with four vendors in which all five parties will share the risks and rewards.

J. P. Morgan expects to save $50 million per year, or 15% of the current expenditures of the information systems operations being outsourced. But J. P. Morgan executives said the real impetus for the project is to help retain its technology edge, to deliver better services to end users and to free up internal resources to build new applications.

J. P. Morgan's Pinnacle Alliance with Computer Sciences Corp. (CSC), Andersen Consulting, AT&T Solutions and Bell Atlantic Network Integration isn't the first of its kind. But the deal goes beyond the traditional prime contractor/subcontractor relationship, taking a flexible team approach in which J. P. Morgan sets the strategic direction.

As such, and due to its size and scope, the Pinnacle Alliance will be closely watched by other potential outsourcing players, such as Aetna Life & Casualty Co. and Du Pont Co.

GENEN UBINA

J. P. Morgan's Peter A. Miller: *The alliance 'will allow us to focus on our strengths in financial services and the creation of application software for those business opportunities'*

An Aetna spokesman said the insurer will consider all options, including a multivendor contract under what analysts said could be a $5 billion outsourcing deal.

Under J. P. Morgan's seven-year pact, CSC will be the prime contractor and will have overall responsibility for managing the New York investment bank's data centers, mainframes, midrange machines and distributed operations worldwide.

The 900 J. P. Morgan technologists affected by the contract have been guaranteed employment at one of the alliance firms.

In its best interest

The contract represents roughly one third of J. P. Morgan's $1 billion information technology budget, said Peter A. Miller, a managing director at J. P. Morgan and co-leader of its corporate technology group.

Miller said the alliance will enable J. P. Morgan to react faster to end-user needs by using service firms that specialize in information technology support. The deal should also help J. P. Morgan's other 1,100 technologists sharpen their focus on developing applications to support the bank's emerging derivatives and equities businesses, he said.

The alliance will have to accommodate many strong-willed personalities and corporate cultures. "You've got three heavyweights in this deal — AT&T, CSC and Andersen — who like to run their own show," said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

Miller sees it differently. "It will be a challenge for us all to work together, but the upside potential of that is very high," he said.

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Users tread ATM minefield

Many shortcomings thwart deployment

By Bob Wallace and Kim Girard
RICHARDSON, TEXAS

Does ATM stand for Another Technology Minefield?

Attendees at The Global Enterprise Network Users Summit here last week said it does.

"We've worked with ATM, but my company is a tire-kicker right now," said Andy Head, a senior information systems analyst at The Dow Chemical Co. in Midland, Mich.

"We're not going to suffer through and bet the whole ranch on it," Head said. "We're going to wait until the technology matures."

ATM technology

Asynchronous Transfer Mode (ATM) is a switching technology that combines voice, data and video traffic over one high-speed pipe. Deployment has been slow because ATM is more expensive and less mature than LAN alternatives such as Ethernet and Token Ring.

Prospective users have tested ATM in field trials, but the results haven't always been positive.

"ATM is not production-ready for my company," said Terry Atkins, a member of the networking staff at JC Penney Co. in Dallas, which has conducted LAN and wide-area network ATM trials.

"Applications can't take advantage of the speed ATM has to offer," Atkins said. JC Penney had to modify existing applications to work with ATM, he said.

That's a problem the ATM Forum is wrestling with as it struggles to approve an application programming interface that developers can use to adapt applications to ATM.

One large user wants the ATM Forum, which has grown to more than 900 member companies, to move quickly so vendors won't implement proprietary versions of ATM standards.

"Some vendors are going out and doing proprietary implementations of what they think certain specs will look like once they become standards," said Chuck Rush, a global network architect at McDonald's Corp. in Oak Brook, Ill. "That creates interoperability problems for users that are building multivendor ATM networks."

Other ATM issues include the following:

- The dearth of tools for managing ATM networks. "I'd sure like to know where ATM network management is," said Linda Winkler, a network manager at Argonne National Laboratory in Chicago. "I'd like to see some real good tools real quickly." Argonne was among the first to build an ATM network.
- High prices. "They have to dramatically lower the cost of the T3 lines needed to access ATM networks," said Mike Moore, a member of the networking staff at Hewlett-Packard Co. in Palo Alto, Calif.

Despite the user gripes, there is still the underlying belief that ATM will gain popularity at some point in the future. "ATM's going to be a great technology," said Fred Sammartino, founder of the ATM Forum. "But it's not going to take the world by storm in the next two to five years."

ATM advisory

Start small: Work with a single vendor in the beginning, then add equipment and new vendors.

Join the ATM Forum or a regional user group to keep up with key industry developments and learn from the experience of others.

Press equipment vendors and carriers for free or cut-rate wares to build a test ATM network. Tell vendors they stand to learn from the effort.

Don't consider ATM implementation without a solid business case to justify the investment.

Middle ground

AT&T's fractional T3 will help bridge the gap between T1 and T3

	T1	Fractional T3*	T3
SPEED	1.5M bit/sec.	3M to 10M bit/sec.	45M bit/sec.
PRICE	$300 to $600 per month	To be determined	$3,000 to $5,000 per month

*AT&T's plan for T3 in 1997

Long-distance carriers to ease wide-area ATM woes with fractional T3 service

By Kim Girard

One of the biggest obstacles to implementing ATM on the wide-area network could be eliminated by the end of the year.

At least two long-distance carriers are expected to offer a service called fractional T3 — also known as T1 inverse multiplexing — for Asynchronous Transfer Mode (ATM) (see story below).

For users who need more bandwidth than T1 ATM at 1.5M bit/sec. but can't afford to jump to T3, or 45M bit/sec., fractional T3 offers a middle ground — flexible bandwidth at increments of 1.5M bit/sec.

"It's huge," said Chuck Rush, a global network architect at McDonald's Corp. in Oak Brook, Ill., who currently does inverse multiplexing himself but wants the service from a carrier. "That's what I'm screaming for. What I want is on-demand bandwidth."

Rush plans to expand an internal ATM pilot project to more than 200 users by next month for voice and data traffic.

Other users agreed with Rush.

"I don't have the seven or eight T1s you need to cost-justify going to a T3," said David Beering, a telecommunications analyst at Amoco Corp.

Expect fractional T3 technology to be offered by MCI Communications Corp. and LDDS Worldcom by the end of the year, said Timothy Burke, an analyst at The Yankee Group in Boston. And AT&T Corp. will offer it early next year, company officials said.

Burke said ATM has failed to flourish in the wide area because, until recently, it was offered only at T3 speeds and above. AT&T, for example, only recently began offering ATM at T1 levels.

Spec needed

One hurdle to providing fractional T3 service is completion of the ATM specification, which should be ratified by the ATM Forum Worldwide Technical Committee at its October meeting.

AT&T plans to offer the service at speeds of 3M bit/sec. to 10M bit/sec. at 300 points of presence nationwide where ATM service is already offered, said Paul A. Moravek, ATM product manager at AT&T's InterSpan Data Communications Services.

"If the forum spec was finished, fractional T3 would be available today," Moravek said during an interview at last week's Global Enterprise Network User Summit Conference in Richardson, Texas.

The success of any fractional T3 offering depends on price, said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

"If you made ATM half the price, it will sell," he said. "If you make it 10% less, it's not going to sell. That's really what it boils down to."

T3 alternative

Fractional T3 for ATM, otherwise known as T1 inverse multiplexing, will provide an alternative for network managers who find T3 service prohibitively expensive and a bad fit for their needs.

Inverse multiplexing for ATM is actually the pulling together of multiple T1s. One signal is transmitted over several of these lines, and a network manager can adjust the bandwidth between network sites in increments of 1.5M or 2M bit/sec., providing much more flexibility. — *Kim Girard*

Links created for legacy, R/3 systems

By Julia King

SAP AG last week gave its stamp of approval to new third-party software that frees users from writing custom interfaces to link legacy systems and SAP's R/3 enterprise software.

Streamlining this time-consuming work could save users millions of dollars in development costs and consultant fees, analysts said.

The new Mercator for R/3 software from TSI International Ltd. in Wilton, Conn., creates links between legacy and R/3 systems by automatically translating external application files to the R/3 format. All translations are done via SAP's application link enabling (ALE) standard. The price of the Mercator software is $30,000.

"This solves one of the many headaches people have in deploying R/3," said Matt Johnson, an analyst at Benchmarking Partners, Inc. in Cambridge, Mass. "There are a lot of people who have been scratching their heads because they have all kinds of other legacy and best-of-breed systems they want to link in."

The long route

Until now, companies have had to write their own interfaces for each legacy application connected to R/3. It is a process that takes about four months per interface, according to Gary Banks, director of Monsanto Corp.'s Center of Technical Excellence in St. Louis.

Before SAP's delivery of R/3 3.0 earlier this year, users also had to write interfaces to connect geographically dispersed R/3 applications. Now, SAP provides standard interfaces for distributing data across different R/3 databases under its ALE messaging architecture.

At Monsanto, for example, ALE is used to distribute purchasing contracts in the R/3 system to multiple Monsanto sites. "This way, all plants can cut purchase orders against the same purchasing contract," Banks explained.

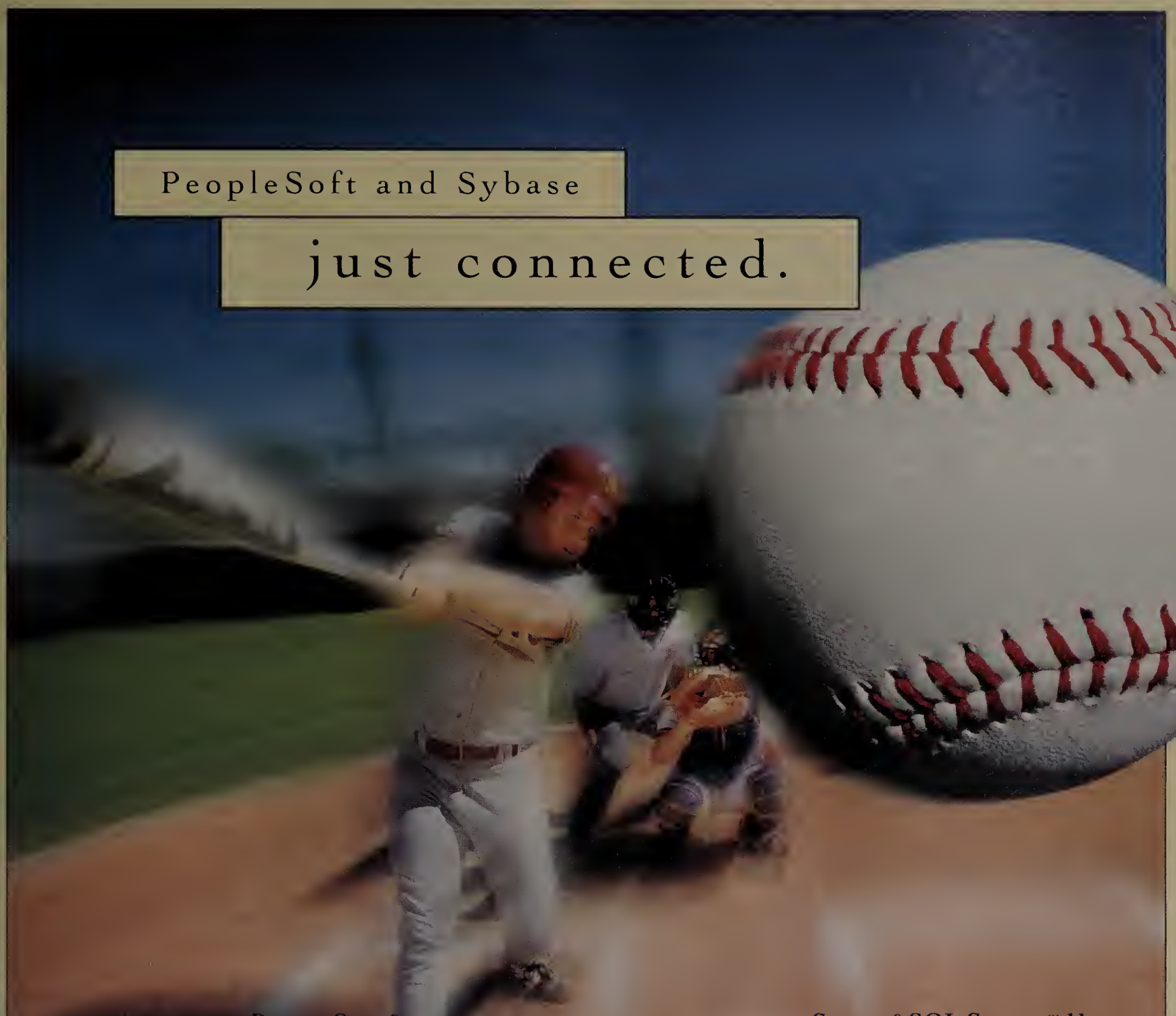
The new Mercator software enables users to go a step further by translating non-R/3 files into ALE-compliant files, which can then also be distributed across different R/3 databases.

TSI International already provides translation software for electronic data interchange transactions to about 800 customers.

Looking ahead, analysts said they expect SAP to add other software vendors to its list of certified ALE suppliers.

Features of Mercator for R/3 translation software

- Supports all SAP platforms
- Employs a drag-and-drop interface for mapping legacy files to R/3 systems
- Can be used to translate data outside of SAP's ALE environment



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Apple strategy leaves corporate users cold

By Lisa Picarille
SAN JOSE, CALIF.

Apple Computer, Inc. Chairman and CEO Gilbert F. Amelio last week tried to rekindle the notion that Apple could "once again change the world." But his pitch left some corporate Macintosh users borrowing another Apple slogan: "Been there; done that."

Most users and analysts said they weren't surprised by Apple's bid to capitalize on the Internet's popularity to bolster market share and improve profitability (see story below). They also were disappointed at the lack of support for corporate users.

"I think if you're an individual Mac owner, this is good news because you know you're loved and cared for," said Harry Fenik, a director at Zona Research, Inc., a market research firm in Redwood City, Calif. "But it did nothing to make MIS think that the Mac should be the machine of choice."

One Macintosh user agreed.

"I don't feel any better about Apple," said Mike Bailey, a systems analyst at Lockheed Martin Missiles and Space in Sunnyvale, Calif., which has more than 9,000 Macintoshes. "They are not addressing the areas where corporations are having problems, like implementing and administrating new system software and hardware. Right now, it's a humongous task and a terrible ordeal, and they are falling behind Microsoft on that front."

Apple's apothecary

What users want from Apple	What Apple plans to do for them
Less complex product line	Halve the number of Macintosh models
More stable Mac OS	Make Copland memory-protected and eventually move to a single version of the Mac OS
Less expensive Macintoshes	Increase competition by broadly licensing Mac OS so clone makers can offer low-cost machines
Better service and support	Form AppleAssist, a new service and support group
Multiplatform support	Create Alternative Platforms unit for Common Hardware Reference Platform, AIX servers and possibly Windows NT servers
Improved connectivity	Support de facto Internet standards such as Multipurpose Internet Mail Extension and Post Office Protocol-3 in Mac OS

RICHARD MORGENSTEIN

Apple's Gilbert F. Amelio: *His game plan ineludes reorganizing the company into four business segments*

Key market

Fenik said Apple can't significantly grow its market share without catering to the lucrative business market. "To reach MIS, Apple needs to build better management tools into the operating system. Right now, Apple's tools focus is on the Internet. Not everyone is a webmaster and needs a personal Web server built in to every Mac," he said.

Amelio's game plan, which he unveiled last week after much speculation and many internal leaks, includes reorganizing the firm into four business segments with three newly formed technology groups — AppleSoft, AppleNet and AppleAssist. Besides focusing on the 'net by adding Internet support and features to the Mac OS, Apple will halve its slate of Macintosh models and get the Mac OS to a single version.

According to Apple sources, Amelio was expected to announce that the company would no longer compete with PC makers on price. Though he didn't address the pricing issue head on, he did note that Apple will try to reestablish its reputation for providing quality products.

Some said many of Amelio's themes seemed all too familiar. "[This] seemed to be the same old strategy, just spit-shined," said one information systems manager at a large Northeast manufacturing firm with several hundred Macintoshes. He requested anonymity.

"Apple is going back to their roots, but that's not going to get them a 20% share of the market," said Kevin Kelly, coordinator for Plymouth Public Schools in Plymouth, Mass.

Apple's market share has dipped to 5.8%, according to a recent report from Dataquest, a research firm in San Jose, Calif.

Kelly said Apple didn't announce anything that will make the job of pitching Macintoshes to his boss any easier, but he was encouraged that Apple put a stake in the ground. "At least Amelio took a leadership stance that was sorely lacking in the past."

Revival plan focuses on strengths of the Internet

By Lisa Picarille
SAN JOSE, CALIF.

Breaking weeks of suspense but offering few surprises, Apple Computer, Inc. Chairman Gilbert F. Amelio last week revealed a revival plan for Apple focused primarily on "industry megatrends" such as the Internet.

Users, developers and analysts said they were relieved to finally have some formal statement of direction.

They said they were generally pleased with Amelio's willingness to hold Apple accountable for several past missteps. But almost everyone said the key will be execution of the plan.

Apple's decision to make the Internet a major thrust throughout its product and business divisions is based on the popularity of the World Wide Web and Apple's current strengths as a Web-authoring platform and Web server.

Apple is the No. 1 platform for Web authoring, with 41% of the Web content being created on Macintoshes, according to Dataquest. The San Jose, Calif.-based market research firm said 17% of Internet servers are Macintosh-based, and 21% of users accessing the Web are doing so from Macintoshes.

Market strategy

Amelio named several specific initiatives designed to strengthen Apple's Internet strategy, including adding Internet access features directly to the Mac OS and supporting industry-standard Internet protocols.

Getting online

Incorporating Internet access features in forthcoming iterations of the Mac OS will make it even easier for users to get online. Amelio said users can expect that some already finished features of the Copland operating system — the Cupertino, Calif., company declined to specify which ones — will be incorporated in interim releases of System 7.5, which are expected to be rolled out over the next nine months [CW, April 22].

Microsoft Corp. announced a similar move last week. The company plans to embed its Internet Information Server into Windows NT 4.0, which is now in beta testing.

Amelio also restated that Copland, Apple's much-delayed next-generation release of the Mac OS, won't be out until sometime next year. The first developer release of Copland — DR 1 — is expected to ship to application developers this summer, he said.

The company is also working on getting the Internet community to adopt some Apple-developed technology.

Netscape Communications Corp. last week announced it will support OpenDoc in its Navigator browser. And Silicon Graphics, Inc. has agreed to adopt three-dimensional Meta File, Apple's format for transferring 3-D graphics over the Internet. Apple, SGI and Netscape are also teaming up to push Moving Worlds, a Virtual Reality Modeling Language specification supported by more than 50 other developers.

Real-time 'net access

Further emphasizing its push into the Internet space, Apple released its Cyberdog suite [CW, May 13] of OpenDoc parts for the Internet, which gives users real-time Internet access from within Macintosh applications (see related story, page 15).

Apple also plans to beef up its server offerings. And it plans to further its partnership with IBM by jointly developing a Mac OS-based notebook computer that will be sold by both companies.

Apple's technology plans

- Release Copland "sometime in 1997."
- Take some features intended for Copland and put into interim Mac OS releases.
- Focus on the Internet by delivering servers, integrating Internet features into the Mac OS and adopting de facto Internet standards.
- Separate hardware and software R&D.
- Strengthen OpenDoc by releasing Cyberdog suite of OpenDoc Internet components; get Netscape to support OpenDoc in its browser.
- License Pippin (a device that connects to TV sets to let users surf the 'net).
- Codevelop with IBM a Mac OS notebook that both companies will sell under their own logos.

Apple, IBM to climb in each other's laptops

Jointly developed notebook to support Mac OS

By Mindy Blodgett

PowerPad or Thinkbook?

These are just a couple of the names wags tossed around last week following Apple Computer, Inc.'s surprise announcement that it is taking another run at partnering with IBM — this time on a jointly developed notebook.

While speaking at the Apple Worldwide Developers Conference in San Jose, Calif., Apple Chairman and CEO Gilbert F. Amelio said the Cupertino, Calif., computer maker and IBM will sell the Mac OS-only portable under their respective logos.

"I think that IBM is trying to spread its wings and broaden its product lines. And I think that IBM sees helping the Mac OS as a way to keep Microsoft in line."

— Timothy Schmidt, Encore Consulting Group

Amelio declined to provide any further details, including when the laptop would be available, its target market or feature set. Two IBM sources said the agreement was very preliminary and that the two companies haven't actually set any plans in motion.

Some industry observers greeted the news with skepticism, pointing out that previous IBM/Apple partnerships haven't been successful. But others saw potential.

"It's good for Apple because it gives users an alternative [platform] for using the Mac OS; for Apple it's a win-win [situation]," said Timothy Schmidt, an analyst at Encore Consulting Group, Inc. in Longwood, Fla. "It will be an extender for Apple. It could attract users who like the IBM design and engineering but are interested in the Mac OS. It might also attract ThinkPad users to the Mac OS."

What's in it for Blue?

As for the benefits to IBM, Schmidt said, "I think that IBM is trying to spread its wings and broaden its product lines. And I think that IBM sees helping the Mac OS as a way to keep Microsoft in line."

Possibly underscoring industry speculation was IBM's reaction. IBM officials confirmed the joint development agreement but declined to release any details. IBM also wouldn't comment on Amelio's statement that the devices will be based only on the Mac OS.

"We're not ready to discuss whether the notebooks will be just Mac OS-based or CHRP [Common Hardware Reference Platform]," said Pam Olson, a spokeswoman for the IBM Microelectronics Division. The CHRP standard, co-developed by Apple and IBM, was designed to work with several operating systems.

Olson did say, though, that the agreement was part of IBM's effort "to open up the Mac world."

Diana Hwang, an analyst at International Data Corp. in Framingham, Mass., said the notebook agreement could bolster Apple's presence in the laptop market.

Hwang pointed out that although the Powerbook remains popular, Apple lost market share in the notebook market last year. Apple, ranked fourth in 1995 among the top 10 vendors for market share, saw its market share decline by 8% last year.

"With someone as powerful as IBM supporting the Mac OS, it could help Apple's overall performance in the notebook market," Hwang said.

Senior editor Lisa Picarille contributed to this story.

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IBM PC Co. weighs in with slim ThinkPad

By Mindy Blodgett

IBM PC Co. this week will join the ultraslim notebook market with a high-powered ThinkPad 560 that weighs just 4 pounds and is 1.2 in. thick, sources said.

The notebooks will have 12.1-in. thin-film transistor screens and will be powered with 100-, 120- and 133-MHz Pentium chips, the sources said. Pricing wasn't available, but sources said the notebooks will be aggressively priced and could start as low as $2,600.

The notebooks will have 810M bytes of hard disk space and up to 40M bytes of memory, according to sources close to the company.

Notebook computers

One IBM ThinkPad user welcomed the addition of a slim line to the notebook offerings.

"I repeatedly hear from the sales force, 'I don't want to carry that notebook around anymore,'" said Kevin Danahy, manager of workgroup applications at Millipore, Inc. in Bedford, Mass. "The days are gone when 7 pounds. didn't seem so heavy for a notebook.

"I think these lighter notebooks, as long as they don't sacrifice basic features, are a godsend, and people are going to love them," Danahy said.

Digital Equipment Corp. was the first out of the block in mid-March with the HiNote Ultra portable line — highly modular laptops that weigh less than 4 pounds.

Compaq Computer Corp. is expected to release a line of ultraportables in the coming months, Vendors including Dell Computer Corp., NEC Technologies, Inc. and Texas Instruments, Inc. also are expected to enter the growing ultraslim market.

Some industry analysts have questioned whether the components of the lightweight notebooks are too fragile and if there is a market for the new designs.

But others predicted that the ultraslim trend will catch on this year and will attract users eager for powerful, lighter notebooks.

On-the-go types may get easier access to the Web and intranets. See page 70.

CIOs target federal IS practices

New alliance seeks to ensure efficient systems development by the government

By Gary H. Anthes
WASHINGTON

Founders of a fledgling council of federal chief information officers last week vowed to bring sound business practices into "a landscape littered with failed systems efforts."

A key goal of the CIO Council, which met here last week, is to ensure that the government gets at least a 20% annual return on its $20 billion information systems budget, said Joe M. Thompson, CIO at the U.S. General Services Administration.

Joe M. Thompson | Barry Horton | Wardell Townsend

Joe M. Thompson, CIO of the U.S. General Services Administration; Barry Horton, assistant CIO at the Pentagon; and Wardell Townsend, IS czar at the Department of Agriculture say the CIO Council will become a kind of IS board of directors for the federal government

STAN BAROUH PHOTOS

Plan of action

The group plans to do this by offering up a set of guidelines, policies and procedures for federal IS managers. A timetable for that hasn't been established.

For example, the council plans to push for more use of commercial, off-the-shelf software, more outsourcing and smaller, incremental development efforts, said Barry Horton, assistant CIO at the U.S. Department of Defense.

The Pentagon also will rely more on electronic commerce and electronic data interchange, and it is now scouring civilian agencies for "best practices" in IS, he said.

The CIOs will help implement a White House mandate that federal IS managers submit major project plans to a capital planning process, which will measure the results and benefits of the proposed systems.

Traditionally, federal agencies have measured the success or failure of systems by looking at development costs and schedules, not return on investment or benefits to the public.

New mandate

Many of the systems that have failed in government and cost taxpayers billions of dollars would never have been undertaken if they had been subject to that kind of scrutiny, the CIOs said.

These initiatives are partly the result of a new law that requires all major federal agencies to appoint CIOs by Aug. 8. So far, few agencies have complied, said Thompson, who was the first to be appointed.

When asked if federal pay scales — the CIOs will be paid $115,600 a year — might be an obstacle to hiring highly skilled technical and business managers, Thompson acknowledged that people in comparable jobs in the industry make between $300,000 and $500,000.

"But we already have them in government," Thompson said.

"People will be motivated by ideals of public service, to make government work better," predicted Wardell Townsend, senior IS manager and an assistant secretary at the U.S. Department of Agriculture.

The group said it had just finished a report that details the skills needed by the federal CIOs.

"The CIO must be a corporate officer that understands the business of government," Thompson said. "The CIO must sit at the [boardroom] table and not be just a technical person."

Iceberg melts

CONTINUED FROM PAGE 1

chief. What puzzled the registry and StorageTek was the extreme nature of the May 10 failure in a RAID 6 system designed to withstand two simultaneous disk crashes.

Dissenting opinion

Storage rivals EMC and IBM each raised unsuccessful challenges to Massachusetts' contract award to StorageTek. State officials rejected claims that low-bidder StorageTek didn't meet the Registry's performance needs.

Besides shipping a replacement unit to the registry's data center the day after the crash, StorageTek sent the failed system back to its Louisville, Colo., headquarters so design engineers could do an electronics post-mortem. Information systems professionals pondered the technology riddle, but one thing was clear: The public nature of the problem bruised the reputations of the vendor and the state agency.

"StorageTek was fortunate that the outage occurred at the registry on a Friday. Had this happened at a financial institution during year-end processing, the effects could have been devastating, not just annoying," said John McArthur, research director at International Data Corp. in Framingham, Mass.

Customer satisfaction

Although the registry's problem appears to be an isolated event, StorageTek users "should demand the results of the root-cause analysis [of the Iceberg crash] to ensure that this type of outage will not occur at their location," McArthur said.

Joe Beal, vice president of customer satisfaction at StorageTek, said the registry's system failure was the only one of its kind among 1,700 installations. Beal and registry officials said even though the Iceberg failed, no data was lost or corrupted. "We've never seen this failure before where we could not get [the controller] back up on site," Beal said.

Out of commission

The Massachusetts Registry of Motor Vehicles system crashed for almost 15 hours on May 10 and 11. The system failure meant:

- Citizens were given temporary handwritten driver's licenses and had to return to the agency's offices to renew licenses and vehicle registrations.
- Police officers making traffic stops couldn't verify whether motorists' licenses and registrations were valid.
- Insurance firms couldn't check drivers' safety records.
- The Registry had to keep its branch service center locations open late on May 13.

Lewis said the RAID 6 array first showed error messages May 9. Those were fixed by some board replacements. But on May 10 at 11 a.m., the array in the agency's data center flashed a series of fatal error messages, Lewis said.

The failure of one of the agency's two arrays disabled the entire system, which is centered on an Amdahl Corp. mainframe, until IS staffers could shift the registry's 450G bytes of data to its other, healthy Iceberg.

A limited number of users then had data access at a degraded performance level early on May 11, Lewis said.

By May 12, after StorageTek flew in a replacement, the registry had re-established its data stores on two Icebergs, and its system was functioning normally — ready for the next day's 750,000 end-user transactions, Lewis said.

He said StorageTek delivered the faulty Iceberg array, a 180G-byte unit, several weeks ago to bolster the performance of the registry's system.

The second unit, added free, resolved the sluggish response times the agency experienced with a single $225,000 270G-byte Iceberg array, Lewis said.

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SGI/Cray integration to run into next millennium

By Craig Stedman

Silicon Graphics, Inc.'s plan to blend its systems with Cray Research, Inc.'s supercomputers is receiving general approval from Cray customers.

But several said the projected four years to finish the job underscores its difficulty.

SGI, which expects to officially acquire Cray next month, has disclosed an integration road map that promises a single product line based on its MIPS microprocessors by 2000.

All Cray systems would be melded with SGI's Power Challenge machines, except for the SPARC-based CS6400 high-end commercial server, which sources said may be sold to Sun Microsystems, Inc.

Additional models of Cray's T90 and J90 supercomputers and its T3E parallel processor will be developed while SGI creates a common software environment for the two companies (see chart). The merged hardware that follows will be compatible with applications written for Cray and SGI systems, SGI officials said.

A common architecture for Cray's supercomputers and SGI's workstations and servers would tie together two of the key platforms for technical users, said Bill Buzbee, director of the scientific computing division at the National Center for Atmospheric Research in Boulder, Colo.

Merger map

Silicon Graphics plans to provide the following to meld with Cray's systems:

ONE TO TWO YEARS:

- Source code compatibility between SGI and Cray operating systems
- Cross-compiling environment for moving applications
- Common visual interface and high-performance file system

THREE TO FOUR YEARS:

- Binary compatibility from workstations to supercomputers
- Modular design tools that support market-specific extensions
- Single hardware architecture based on MIPS microprocessors

"I think the vision is great," Buzbee said. "But we have only the broadest outline of what the plans are. Given the complexity involved, there's a lot of work to do." For example, SGI will have to prove that its unified line can handle the vector processing applications that need Cray-class machines, he added.

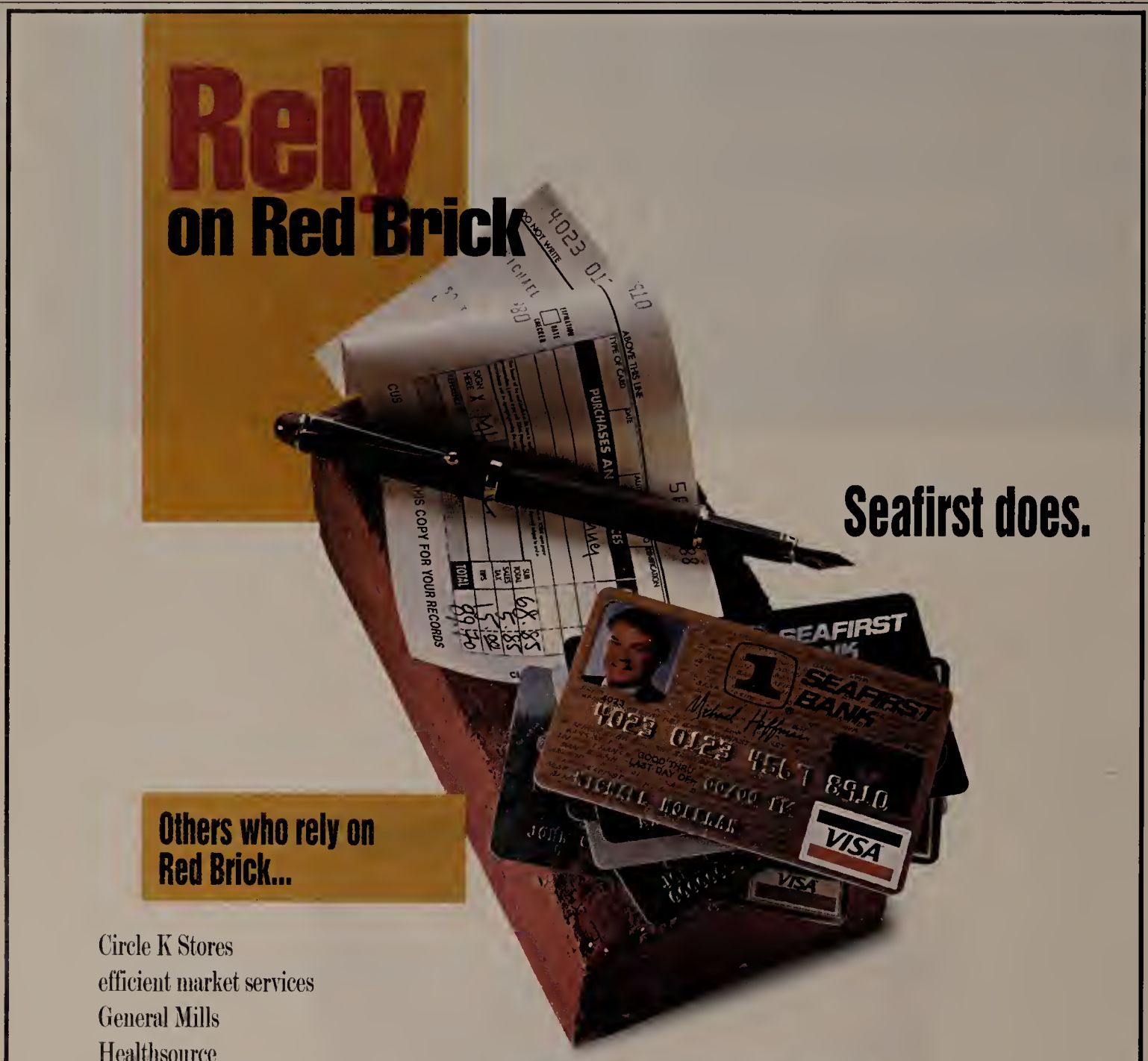
Long road to big payoff

"We'll see how that works out," agreed Mark Finn, a research scientist at Alcan International Ltd. in Kingston, Ontario. "It's not trivial, and [four years] is a long time in the computer industry; that's for sure. But at that level, I don't see anybody else competing [with Cray and SGI]."

Alcan, a maker of aluminum, uses SGI and Cray machines to run a variety of metals research and modeling applications. Currently, there is a break point at which large problems get pushed toward the Cray boxes, Finn said. Unifying the two lines would "make a very nice environment to work in," he added.

For now, SGI and Cray look like "disparate businesses that just happen to have one corporate title," said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. The plan for bringing them together sounds good, "but it's very much long-term," he added. "I wouldn't make a downpayment based on it."

Meanwhile, officials at Cray and Sun declined to comment on reports that they are negotiating a deal for the CS6400. The SPARC-based system, which supports up to 64 processors, would expand Sun's server line beyond the 30-CPU limit on the Ultra Enterprise machines it announced last month.



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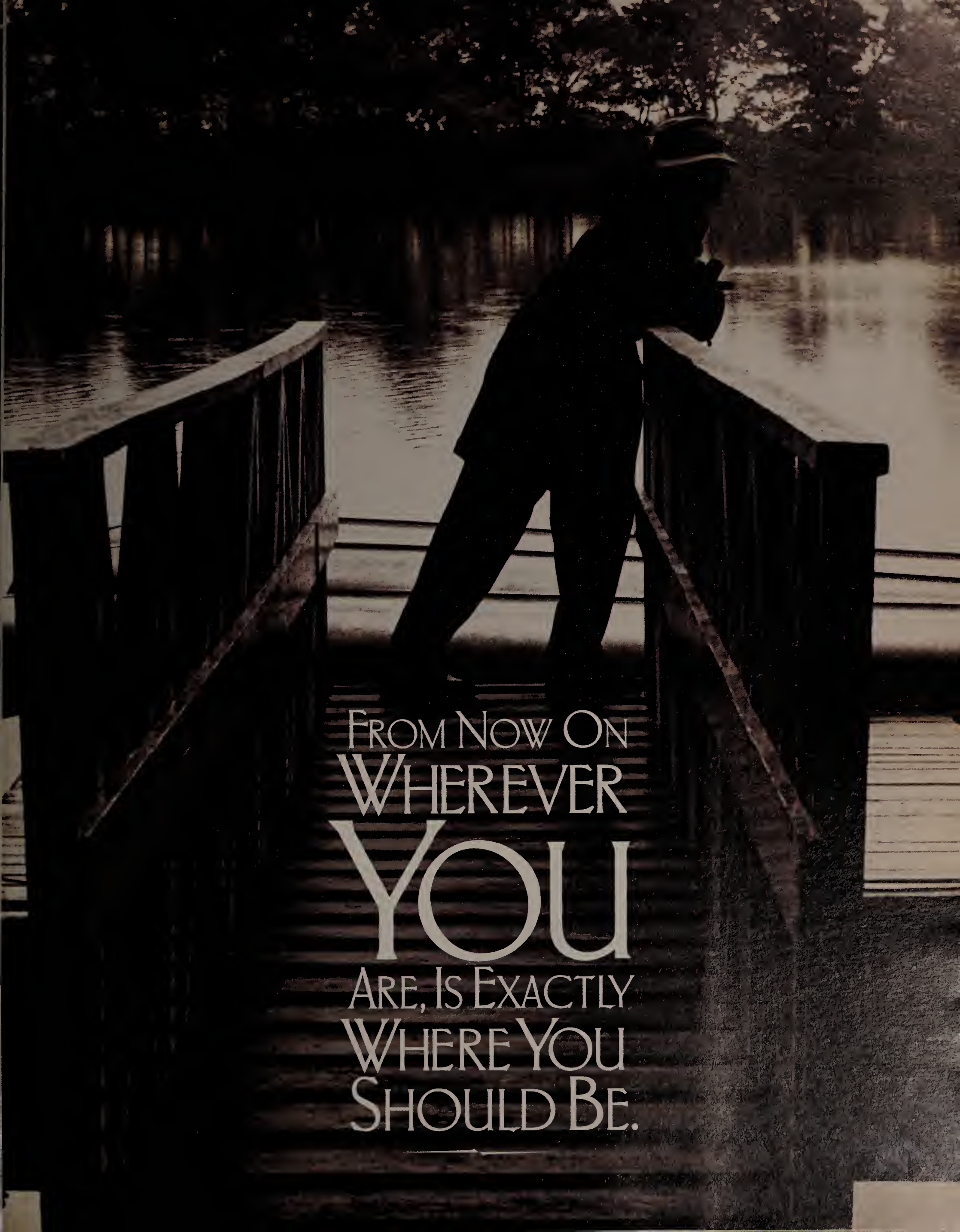
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Open Market one-ups Web server foes

By Kim S. Nash

On the eve of its initial public offering (IPO), Open Market Corp. has upgraded its World Wide Web software to include more security options and the ability to run more than one Web site from a single server.

The products are aimed primarily at online stores and other companies that want to do business on the Web. Along those lines, the Cambridge, Mass., company has ceased producing its nonsecure server, which doesn't sell well among users who hope to protect customer credit-card numbers and other sensitive information.

Open Market wouldn't reveal installed base figures, but its Web software was used at 251 of 193,150 public Web sites randomly polled last month by U.K. consulting firm Netcraft Ltd.

But some of the biggest and most-visited sites on the Web use Open Market servers, including Time, Inc.'s Pathfinder and Tribune Media Services. Those users declined to talk about Open Market because, as investors in the vendor, they are in a quiet period before Open Market's IPO at the end of the month.

Open Market, which competes with Web server makers Microsoft Corp. and Netscape Communications Corp., among others, must funnel funds raised from its planned 4 million-share IPO back in to product developments, users said.

"When you have competition like that, it will help to have a few bucks in the bank account," said Stephen Gesner, associate vice president of alternative delivery channels at Toronto Dominion Bank.

The Toronto bank uses Web products from all three vendors because "it's too early in the [Internet] game not to take advantage of the technical leapfrogging they all do," Gesner said.

Open Market's Secure WebServer aims to leapfrog rivals with these features:

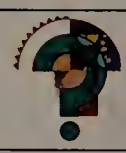
- Faster performance by using a slimmer extension to Common Gateway Interface language
- The ability to host more than one Web site on a single WebServer
- A smaller price tag. Version 1.0 was $4,995; Version 2.0 is $1,495. It will be briefly discounted to $895.

Open Market's latest upgrade, Secure WebServer 2.0, hops over the competition by supporting several security schemes. The package is being offered to existing users for $295. It supports Secure Sockets Layer (SSL), Secure Hypertext Transport Protocol (SHTTP) and Private Communication Technology.

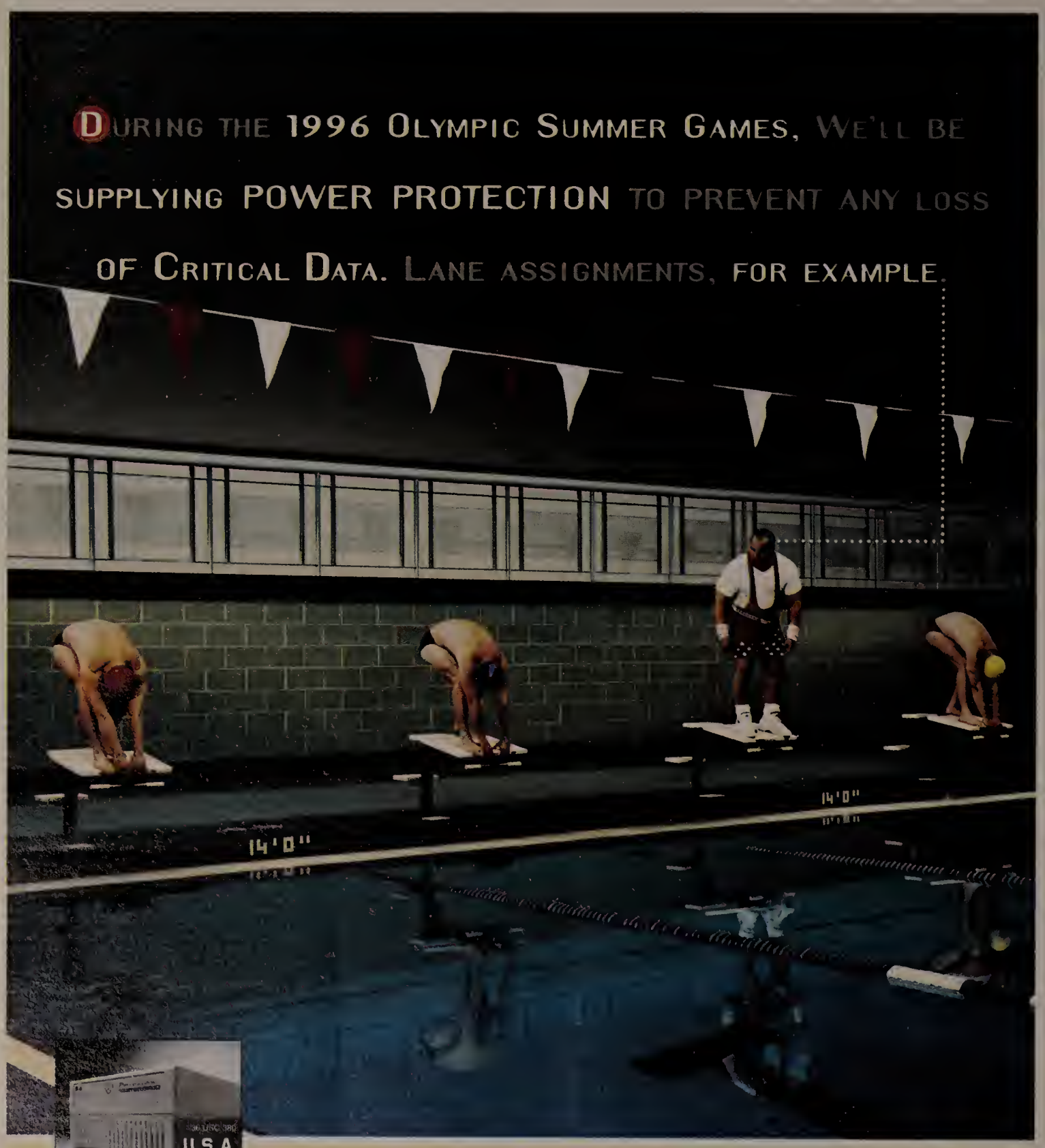
Netscape's server supports SSL and SHTTP. Microsoft's Internet Information Server doesn't support any security schemes, but a forthcoming version of the product will, Microsoft officials said.

Also announced was a new version of WebReporter, a Web site monitoring utility. WebReporter 2.0, which will be bundled with WebServer 2.0, sports a new interface with templates for running and viewing standard reports. The utility also can be bought separately for $495.

The products are due to ship this month.



Fear, uncertainty and doubt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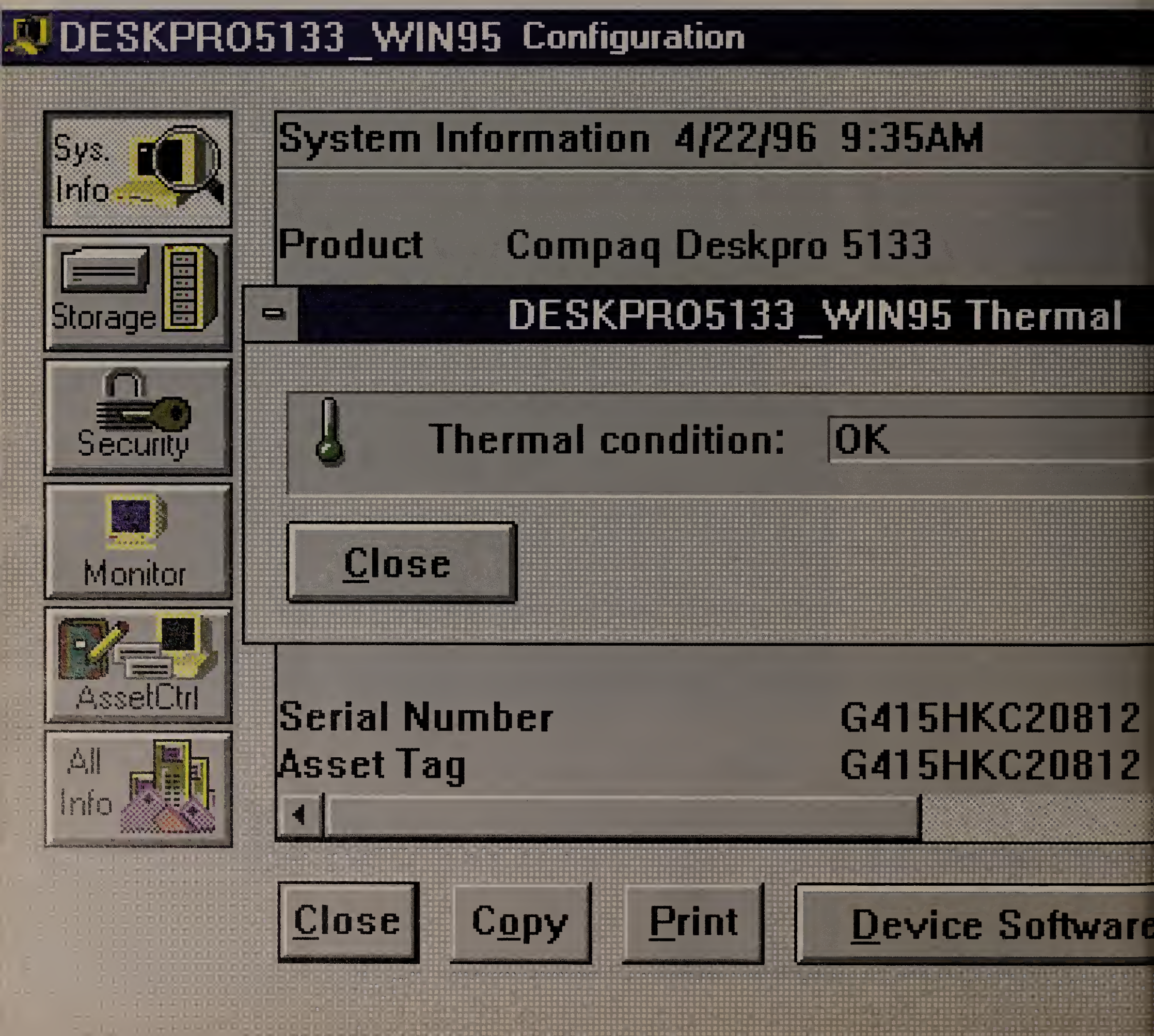

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PeopleSoft gains support

Early commitment gives users say in manufacturing app design

By Julia King

PeopleSoft, Inc. won't begin shipping its new suite of built-from-scratch manufacturing applications until December. But several large firms have already purchased the software, which is unusual in a marketplace known for vaporware.

"Definitely it's a risk, but it's a calculated risk," said Kathy Cayton, treasurer at Durham, N.C.-based Mitsubishi Semiconductor America, Inc. Mitsubishi uses PeopleSoft's human resources software.

Benefits of early buying

The advantage to buying early is a bigger say in how the final software will actually function.

"Being a beta partner on [PeopleSoft's new] supply chain, order management and manufacturing software gave us the opportunity to shape the product to our operations," said Frank Glauner, chief information officer at Corning Costar in Boston.

For example, Corning needs to track inventory by both pallet number and lot number. At Corning's suggestion, PeopleSoft built both features in to the manufacturing system.

Corning, Inc., the glass and optical fiber giant, plans to deploy the new suite of manufacturing applications at dozens of sites worldwide. Boise Cascade in Boise, Idaho, Whirlpool Corp. in Benton Harbor, Mich., and Toyota Motor Manufacturing, USA in Georgetown, Ky., have also bought licenses.

"In manufacturing, PeopleSoft is the new kid on the block, but they have a track record in every other market they have entered," said Jim Shepherd, an analyst at Advanced Manufacturing Research, Inc. in Boston. For these reasons, "everybody will take a look at them," he added.

But they should do so cautiously, warned Mike Capellas, an analyst at Benchmarking Partners, Inc. in Cambridge, Mass.

"In both human resources and financial software, PeopleSoft is very solid, Capellas said.

"The attraction to their manufacturing is the planning and scheduling and workflow features," Capellas added. Still, committing to unannounced software from a company with no manufacturing experience is "highly unusual and risky," he said.

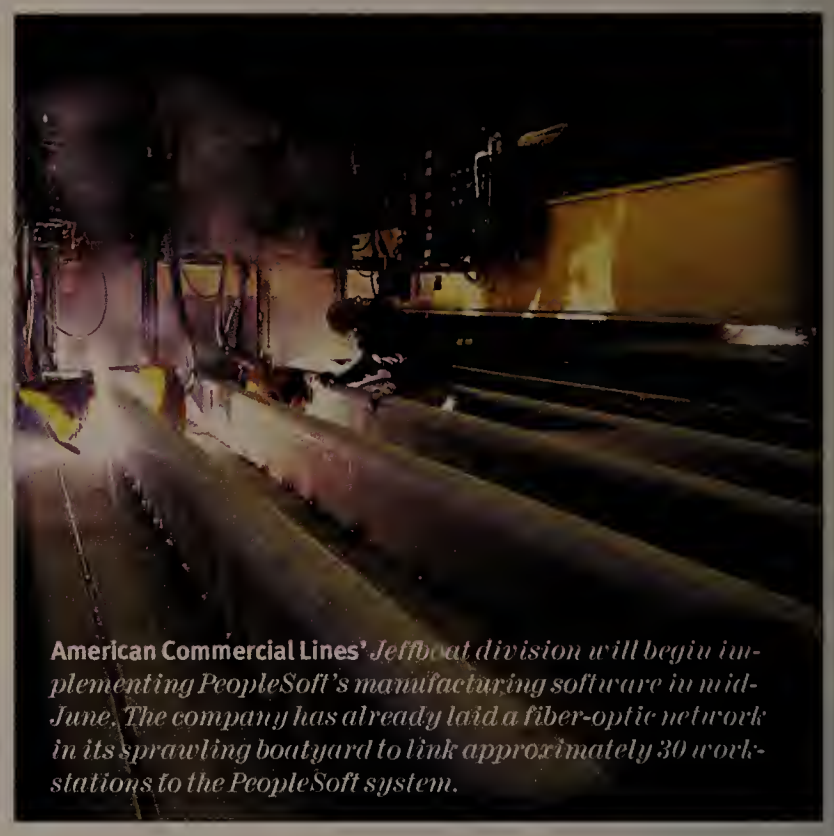
PeopleSoft's software suite includes five applications for engineering, billing and routing, production planning, production management and cost management. Each costs $90,000.

PeopleSoft also announced a product configurator, a rules-based system for defining and scheduling the manufacture of custom products, and a real-time enterprise planning application. The latter is based on technology from Red Pepper Software in San Mateo, Calif. Both products can be integrated into the manufacturing system.

The applications suite, which also includes embedded workflow technology, is based on the premise that "manufacturing companies want to buy tightly integrated systems. They don't want to put an enterprise system together themselves," said Chris Wong, PeopleSoft's manufacturing systems architect.

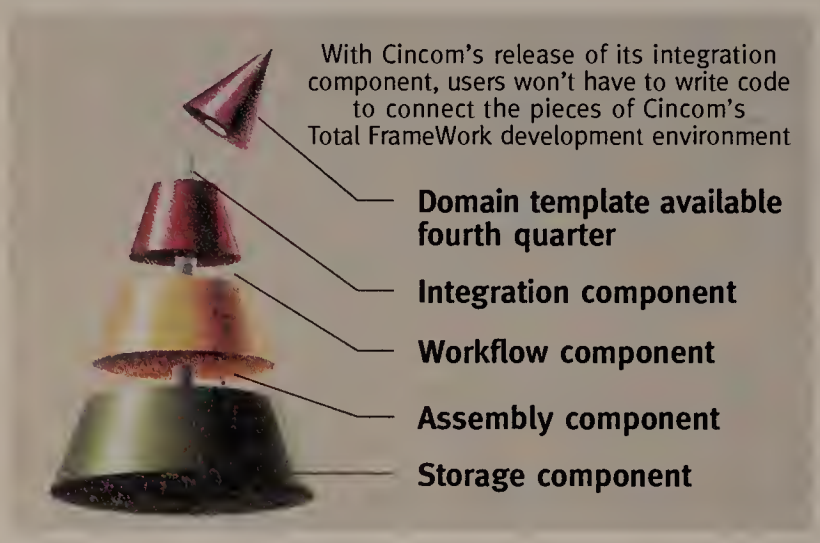
Such is the case at $600 million American Commercial Lines, Inc., which purchased the manufacturing applications to run its Jeffboat barge construction division in Jeffersonville, Ind. Jeffboat runs PeopleSoft's financial software.

"About 60% of building a barge is materials, and the other 40% is labor," said Jim Wolff, the company's chief financial officer. "So the idea of integrating the shop floor with purchasing and inventory and labor and time and attendance is critical."



American Commercial Lines' *Jeffboat division will begin implementing PeopleSoft's manufacturing software in mid-June. The company has already laid a fiber-optic network in its sprawling boatyard to link approximately 30 workstations to the PeopleSoft system.*

Cincom leads integration pack


With Cincom's release of its integration component, users won't have to write code to connect the pieces of Cincom's Total FrameWork development environment
Domain template available fourth quarter
Integration component
Workflow component
Assembly component
Storage component

By Sharon Gaudin

Cincom Systems, Inc. is forging a new bend in the application development industry's component integration curve.

Cincinnati-based Cincom will add an integration component to its Total FrameWork assembly environment.

The Component Integration FrameWork, which the company announced at the recent Object World in Boston, was designed to tie together the manufacturing environment's three other components: workflow, assembly and storage.

Analysts and users said Cincom is leading the way in building integration into complex software systems — saving users from writing code to link various components. Objects can be linked without an integration component, but making that happen is no easy process.

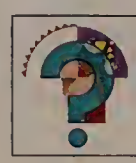
Mark Winter, president of Mark Winter & Associates in Toronto, uses Cincom's Total FrameWork in about 75% of his $3 million customized application development business. "I'm extremely excited. My measurement of success is how many solutions I can turn in a year. With this integration, we'll be more profitable because we can turn everything around faster," Winter said. He added that integrated components will initially save him 25% to 30% of his time.

"The speed in which applications need to be developed has increased so much that to be competitive, vendors are going to have to offer a level of integration," said Nathaniel Palmer, an analyst at Delphi Consulting Group in Boston.

David Kelly, director of application strategies at Hurwitz Consulting Group in Newton, Mass., said Cincom's announcement should soon be mirrored by other application development tool vendors.

For the second-largest telecommunications company in Alaska, having the integration capability built in to the product rather than offered as an outside piece is key.

"If you look at the whole package, Cincom does very, very well because they don't just sell you components and expect you to do all the glue work to make them work together," said David Oglesby, MIS director at General Communications, Inc. in Anchorage, Alaska.



Menlo Park, Calif.

Cyber copyright issue sparks fierce debate

By Gary H. Anthes

WASHINGTON

Owners of software and other copyrighted materials and those who transport them squared off recently over a bill to bring copyright law into the digital age.

Publishers of software, books and other intellectual property said the bill, which is before the Senate, must protect them from electronic piracy.

But online access providers worry that the bill would unfairly make them liable for copyright infringement that is beyond their ability to detect or control.

The debate centers on the National Information Infrastructure Copyright Protection Act of 1995 and a similar bill pending in the House. The bills are intended to extend to cyberspace the copyright protections now in place for physical media.

Legislation that better protects copyrights in cyberspace may aid users by making more information available online.

"Today, organizations ... are not putting all of their paper-world content on the Internet precisely because of the concern for protecting their intellectual property," said Sen. Conrad Burns (R-Mont.), who spoke in support of the bill.

Michael Roberts, networking vice president at Educom, a Washington-based association of university network specialists, expressed concern that university information systems managers may be forced to police the content on their servers, which would violate the privacy of faculty and students.

William W. Burrington, director of public policy at America Online, Inc., said any new law must make it clear that access providers aren't to serve as deep pockets to compensate copyright owners whose rights are infringed by Internet users. He said the Senate bill must be amended to clarify at least the following three issues:

- Service providers and systems operators won't be liable for any copyright infringements when, like a telephone company, they provide only conduit services.
- Service providers must not be required to police file or message contents.
- It is the responsibility of copyright owners to notify service providers of copyright infringements and the responsibility of service providers to remove the infringing material.

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A few thoughts about motivation and UNIFACE application-building strongware from Jim Rutherford, President/General Manager, Hartford Whalers

"Frankly I don't know squat about computers or software or any of that client/server stuff, but I do know the guys in the front office swear by our UNIFACE strongware and say it's the meanest dog around for building real client/server systems, and we built real systems. But, hey, if you'd like to talk to someone with a little more expertise about the advantages of UNIFACE just call Compuware at 800-365-3608 or let me put you in touch with a certain 6'4", 230-pound defenseman of ours. He has a definite knack for moving people in the right direction. A real motivator that guy."

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UNIFACE APPLICATION DEVELOPMENT STRONGWARE

Computer Industry

Pieper leads 'new' Tandem

By Michael Goldberg

For Roel Pieper, "NT" stands for "New Tandem."

With the May 7 announcement of a deal with Microsoft Corp., Pieper, president and CEO of Tandem Computers, Inc., followed through on a pledge he made when he took leadership in January: Get Tandem's proprietary technology into as many hands as possible.

For Tandem, the growing audience for the Windows NT operating system represents a lot of hands — and a compelling reason to build its own NT servers and sell its ServerNet clustering technology and fault-tolerant middleware to Microsoft customers [CW, May 13].

Tandem sowed the seeds of the Windows NT deal with Microsoft when it unveiled ServerNet almost a year ago

- **July 1995** – Tandem announces it has developed ServerNet, a low-latency interconnect to speed data throughput.
- **October 1995** – Compaq announces it will use Tandem ServerNet interconnects to build clusters of Windows NT servers.
- **January 1996** – Tandem founder James Treybig steps aside; UB Networks head Roel Pieper is appointed as new president and CEO.
- **May 1996** – As part of deal with Microsoft, Tandem will produce Windows NT servers using Intel chips and NT versions of its fault-tolerant middleware. Microsoft clustering software for NT will enable the use of Tandem server interconnects.

"We never really had a plan before to take our business solutions software and get it off our [proprietary Himalaya server] platform," said William Heil, Tandem's senior vice president of marketing. "Our strategy before was to take the Himalaya and make it cheaper and cheaper. And there's only so cheap you can make a platform.

"Now [Pieper has] got Tandem out of this gridlock. We're saying it's OK to compete *and* cooperate with a competitor," Heil added.

Observers said the Windows NT move is one Cupertino, Calif.-based Tandem was forced to make to broaden its appeal both in the marketplace and among its traditional user base of financial institutions, stock markets and insurance companies.

Time will tell

While longtime fans of Tandem's technology are hopeful, some analysts suggest it will take at least a year for the Microsoft deal to have an impact on Tandem's bottom line.

It will take even longer to determine if the company can break out of its core constituency and make money on products such as Windows NT servers, which bring in smaller profit margins than massively parallel computers.

Wall Street has taken a cautious view thus far. Tandem stock, which was trading at less than $9 during the past year, has been about $13 per share in the past week.

"It isn't a chip shot to make this work. How much money accrues to Tandem remains to be seen," said Gary Helmig, an analyst at SoundView Financial Group in Stamford, Conn. Helmig said the next couple of quarters don't look very strong, although a new Himalaya rollout late this year should help.

John Howe, chief technology officer at Applied Communications, Inc., a longtime developer of banking applications for Tandem systems, said the deal with Microsoft represents a vital change in Tandem's thinking and a direction that will help Tandem users stick with the vendor and comfortably include NT systems.

"A lot of people inside Tandem had to have a change of heart to think of themselves as software builders instead of box [designers]," Howe said. He added that Pieper's background as a software executive helped spur the change.

Resurrected

New focus, vitality at Gupta, Borland

By Frank Hayes

Gupta and Borland, both of which were awash in red ink a year ago, have turned to high-end application development tools in an aggressive bid to gain ground on rivals Microsoft and Powersoft.

The strategy seems to be working — so much so that Gupta Corp. stunned Wall Street last week by reporting its first profitable quarter in two years. A day earlier, Borland International, Inc. had shocked customers of Open Environment Corp. by announcing plans to acquire the Boston-based high-end development tool maker for $64 million.

Back from the brink

Borland and Gupta have pulled into the black by focusing on client/server development

PROFIT/LOSS	Gupta	Borland
Q1 1995	–$1M	–$51M
Q2 1995	–$2.9M	$2.8M
Q3 1995	–$4.7M	$350,000
Q4 1995	*	$850,000
Q1 1996	$320,000	$8M

*Not available due to accounting changes

Good times

Gupta — which in a month will officially change its name to Centura Software Corp. — turned its $320,000 profit on sales of $15.4 million. The unexpected black ink, which pushed Gupta's stock price to $6.25 from less than $4 earlier this month, was possible because the Menlo Park, Calif., company slashed overhead to about $15 million from roughly $21 million last year and laid off nearly one third of its employees.

"They've got the expenses down to a dull roar, but they're not out of the woods by any means," said Ed Bierdeman, research director at Dakin Securities Corp. in San Francisco. "Now they've got to work on revenues."

For that, Gupta will depend on the long-awaited successor to its PC-based SQLWindows product line. The new tool set, known as Centura, is aimed at distributed client/server development and will ship by the end of this month.

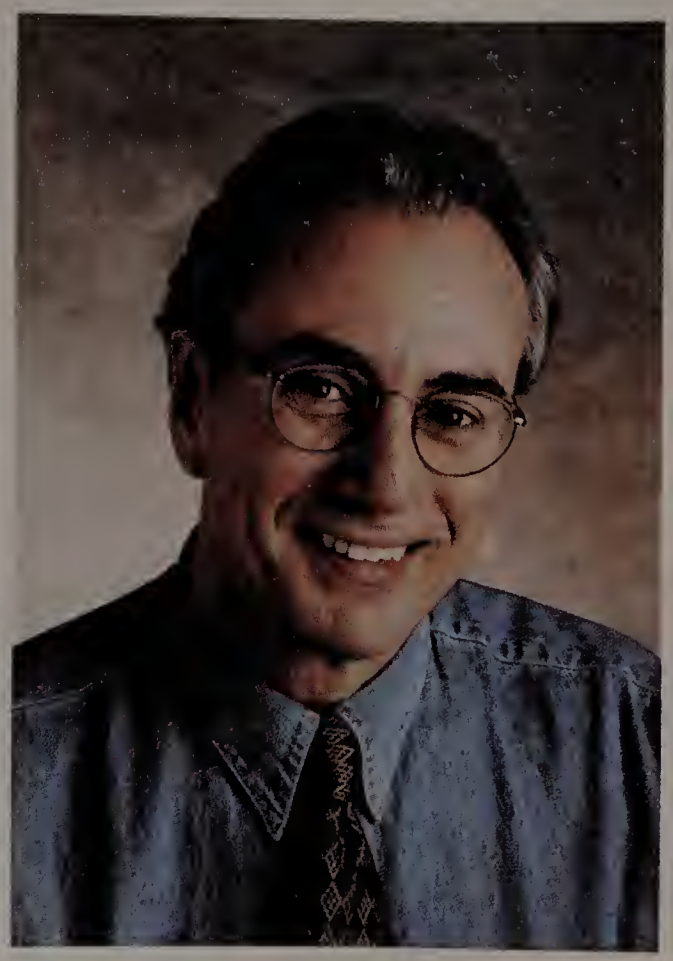
Meanwhile, Borland — which engineered its own back-from-the-grave turnaround a year ago — will pay about $64 million in stock for Open Environment, which makes tools for stitching together new and legacy applications into distributed systems.

The deal instantly gives the Scotts Valley, Calif., company a strong high-end entry point into large organizations. Borland's Delphi visual development system has been well-received in big information systems shops, but some customers doubted the longtime PC software vendor's ability to handle larger platforms. Open Environment's middleware tools run on platforms that range from mainframes to PCs.

"My initial response was, 'Oh no, what does this mean to us?'" said Timothy M. Tully, vice president of architecture and technology at T. Rowe Price and Associates in Baltimore, a customer of both Borland and Open Environment. "But we feel pretty comfortable as long as [Open Environment's tools] stay open."

Open Environment's tools work with other visual development systems, including Microsoft Corp.'s Visual Basic, Sybase, Inc. subsidiary Powersoft Corp.'s PowerBuilder and Gupta's Centura. Borland officials said support for other vendors' tools won't change with the merger.

Insurers are spending more than ever on application development. See page 51.



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Editorial

Cyberfoolishness

Let us join together and wring our hands this week over the latest cyberflap about Internet marketing.

This time the culprit is a Web site called KidsCom, which stands accused of "damaging and exploiting" its wee visitors by invading their privacy with noxious marketing questionnaires.

Weighing in for truth, justice and the importance of publicity is the rather self-righteous Center for Media Education. This private group wants the Federal Trade Commission to cough up some rules and regulations, enforce clear labeling of advertisements on Web sites and put an end to any links between sites aimed at children and advertiser home pages (Just say no to Disney hot links!).

Now here's what the world and the computer industry needs: more government oversight where no demonstrable harm is being done and more hassle for IS professionals and Web developers, who should be focusing on innovation rather than pointless regulation.

In an ominously worded report posted on the center's Web site (http://www.cme.org/cme/), even Tony the Tiger is manhandled for enticing children to play with him online. Now, honestly, did Tony ever promise any of us anything beyond the gr-r-reat taste of Frosted Flakes?

In order to gather some unbiased and completely unprofessional opinion, I took the issue to my daughter Katie, age 11, surfer extraordinaire. This is a child who, when she heard I was visiting Netscape recently, begged me to bring her back some autographs. So let's say she's keenly interested in the 'net.

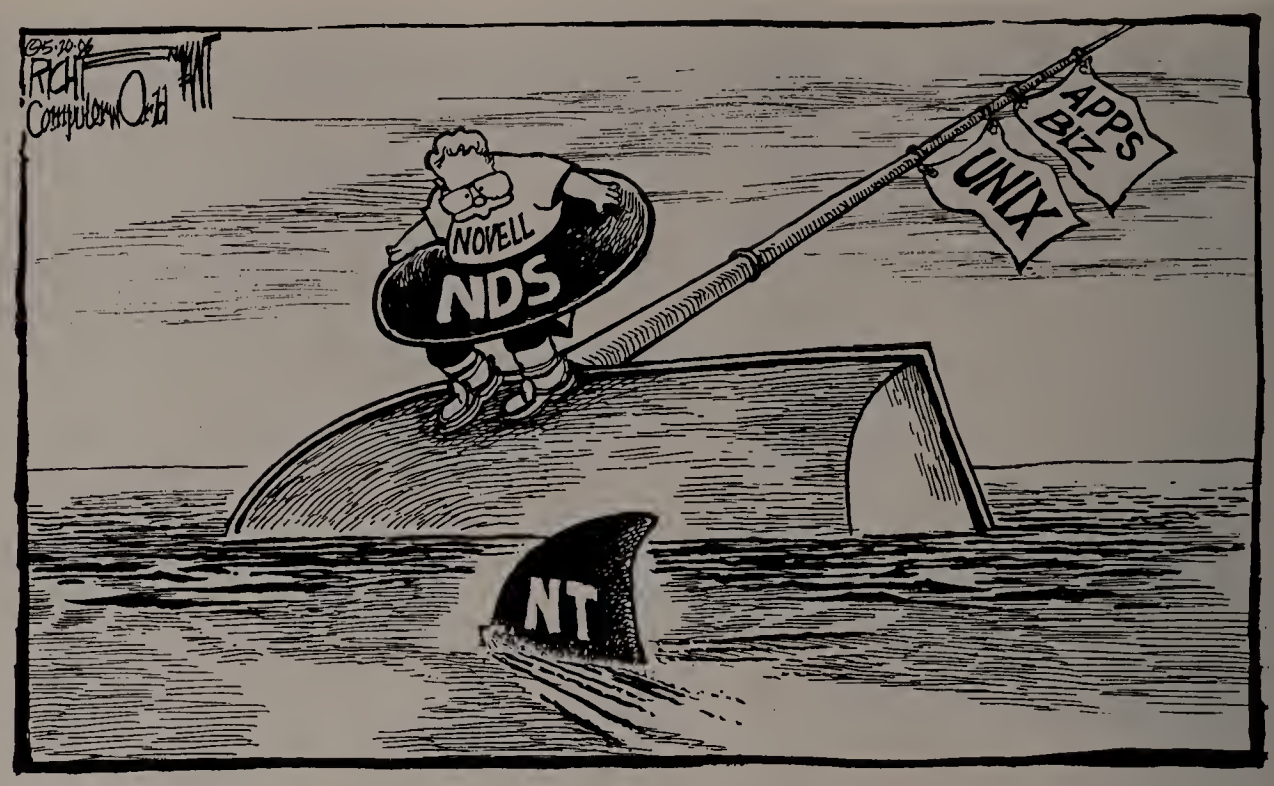
Katie signed on to the site, slogged her way through the 20-plus registration questions ("If I could shape-shift, what creature would I be? This is *so* stupid!") and came to her bottom line on KidsCom: "It's major lame. The games are dumb, and the graphics take forever."

Indeed, the whole issue is lame. Kids are marketed to everywhere they turn, and they know it. The main protection they need is encouragement to be skeptical, demanding consumers who examine all their choices. Here's one vote cast for the FTC to find something better to do with its time.

... And speaking of Web sites and the good use of time, check out *Computerworld*'s first installment of cw.internaut (page 67). This new monthly feature in our Internet section provides a behind-the-scenes look at IS folk who are tackling company Web sites. Even Tony the Tiger would be impressed.

Maryfran Johnson

Maryfran Johnson, *Executive Editor*
Internet: *maryfran_johnson@cw.com*



Letters to the editor

Hunger strikers guilty of 'senseless dramatics' in U.S./Cuba trade embargo

...o make technology work for all

We're too busy to look up from our screens to help the technology ...e-nots.

Joseph Maglitta's article "Dying to make technology work for all" [CW, May 6] uses karmic logic to dictate that technology should be used to make the world a better place. The political boycott of Cuba may or may not make sense, and the impact that some obsolete equipment may have upon the larger political picture may be questionable. But to conclude that the incident makes equipping the whole world with computers a moral necessity is simply silly and really quite arrogant. It gets a little scary when someone concludes that they know what's best for everyone else. I think classical imperialists called it "the white man's burden," didn't they?

Gerald L. Geisel
Cincinnati
ggeisel@one.net

In response to Lisa Valanti's question "What is stupider? What I'm doing or what our government is doing?" let me say emphatically that what she is doing is far stupider. Surely there is a better way for Valanti to help the people of Cuba than making a spectacle of herself by camping in Washington and bragging of how hungry she is. While it's fine to say that technology should be used to make the world a better place, it must be remembered that not everything is as grand as the grand words describing it. All Valanti's senseless dramatics accomplish is to make her look dramatic. They save no Cuban lives.

Matthew Johnson
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Selfishness is evident when four people decide that their government is wrong to enforce an embargo against one of the cruelest dictators in history. I am not the least bit moved by what these people are doing. I am more moved by what Maglitta wrote about it. He seems not to have looked up from his screen long enough to know that we *have* made the U.S. a better place. The embargo is a way to improve Cuba if it ultimately works and rids the world of Castro.

If the fasters were truly humanitarian, they would give the computers to someone not under an embargo — like Haiti, for example. In the future, do not use *Computerworld*'s pages for this empty bleeding-heart nonsense.

Davis F. Staats
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Old ways? No way

I have to disagree with Richard Finkelstein on the server-centric approach ["Separating the cybergems from the cyberjunk," CW, April 29]. Going back to the old ways — where information services controlled everything and all support came from one location — is not what I consider providing great service. I have worked in this environment and found that the overall cost of centralized computing not only isn't cost-effective, but doesn't use the full resources available in the company.

One of the main reasons desktop computing has become so popular is that users found they could be more productive if they had the latitude to work on their own rather than rely on IS for everything. A better approach is to combine desktop and centralized computing in an environment where end users and IS work together. The chances for success are much greater than if IS is seen as authoritarian.

Gary Ehrenfeld
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■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Chris Miksanek

Monitoring where no tool has gone before

We need remote agents that check the office copier and the coffee pot.

Today's enterprise systems managers can monitor far-flung computers by dispatching software routines known as "agents" to target systems. The ability to monitor an MVS subsystem is great, but corporate efficiency could be further improved if intelligent agents were deployed in other nooks and crannies of the enterprise. My requirements for "Total Enterprise Management" include the following:

The photocopier agent. In a statistic I just made up, 2½ minutes per workday per employee are spent waiting for the photocopier to warm up. A photocopier agent could notify you when it's safe to leave your workstation by displaying a pop-up flag after someone from another department has first wasted his time waiting for the copier to warm up.

The moisturizing agent. Contractors come in every few weeks to water your plants -- and your company pays them for that. What a racket! With this agent enabled, you could be alerted when the plants are thirsty. Then pour your cold coffee into the planter when you pass by, and save big bucks!

The press agent. Are you getting writer's cramp from filling out all those forms to qualify for free subscriptions? An automated agent could complete the form with the following profile: Title: Mayor of SIM City. Influence, authorize or recommend annual software and hardware expenditures of: $100 billion. Employees at this location: 100 million. My mail slot overfloweth!

The telephone agent. If unwanted calls are distracting you from World Wide Web browsing, dispatch this user-programmable agent to manage inbound messaging. The phone agent says, "Press 1 if you're a salesman, then stay on the line, and your call will be answered in the order it was received." If "1" is pressed, the agent puts the caller in a voice-mail loop from hell.

MATT WAWIORKA

The break-room agent. When the dregs of last Thursday's coffee are baking in the bottom of the pot, they emit a distracting stench only a little less vile than the smell of popcorn burning in the microwave. This agent would monitor the office coffee pot and notify you when the supply of coffee stirrers is low — or do you like using your pen?

The theatrical agent. This agent detects when employees are just "acting" busy. It monitors end user applications for attempts to update a document with "high score" in its name and other such improprieties. Employees will call it Big Brother. But they complained when you made them do status reports, and they got over it.

The secret agent. Stealth is important for self-protection. For example, having a secret identity protects an inefficient performance monitor from targeting itself for termination because it's the biggest processing hog on the system. Someday, we'll have double agents, which will ferret out other vendors' secret agents by masquerading as a secret agent in the same domain.

The agent provocateur. If your underutilized system leaves management questioning your hardware budget, dispatch some of these little troublemakers. They'll stir up some frivolous CPU utilization, direct-access storage device consumption and network bottlenecks — so next year you'll have an extra 15% to spend!

Miksanek has been told he's "that close" to becoming a free agent.

Patricia B. Seybold

How Notes can survive the Web stampede

Lotus needs to give its crown jewels, such as replication, to Web developers.

Lotus Notes and its users are under siege from the World Wide Web. Colleagues who don't use Notes ask: "Why continue to invest in Notes when you can do the same kinds of things with cheap and easy Web tools?"

These non-Notes users don't understand the real value of Notes. Asking a Notes user to give up Notes is like asking a Macintosh user to abandon his machine. On the other hand, Notes aficionados are willing to accept the inevitable: Notes will be overtaken by the Web. The only questions are when and how.

Notes will be overtaken by the Web. The only questions are when and how.

What is it about Notes that non-Notes users don't understand? First, they ignore the utility and power of client/server replication. Most Notes users are peripatetic. They work on disconnected laptops as often as they hook in to networks. They can't imagine having to be online to be productive.

Second, Notes users can, and often do, design and customize their own applications. This empowers them. It lets them quickly launch new projects, refine business processes and respond quickly to customers and market demands.

This still isn't easy to do on most other platforms, including the Web. To design applications on the Web, you need to dive down into Hypertext Markup Language and Common Gateway Interface scripting, which most end users would like to avoid. The closest analogy is the spreadsheet. A surprising number of spreadsheet users can design their own simple spreadsheet or take someone else's and tweak it to make it more useful or appropriate to the task at hand. The same is true of Notes databases.

Finally, non-Notes users don't understand how most Notes users "live" in Notes. It's where they hang out online, where projects live, where customer contacts are logged and where much of their electronic mail arrives. And it's always on their desktop or laptop; they don't have to "go out on to the Web" to get work done.

Notes users aren't trying to avoid the Web. They're actually very enthusiastic about the efforts Lotus has made, and continues to make, to embrace the Web.

Notes customers who have already invested a great deal in building and maintaining a set of hyperlinked databases can simply slide that information on to the Web and make it available to a much broader set of people. Soon, you'll be able to turn your Notes server into a Notes/Web server, so you won't have to support two different environments.

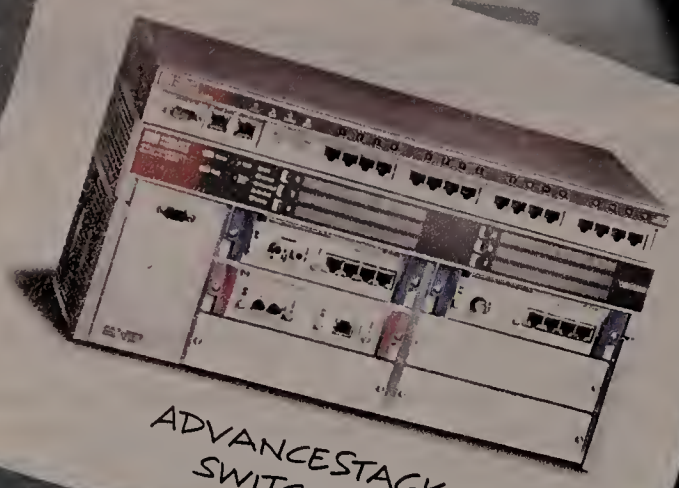
But Lotus' efforts may be too little too late to keep Notes users from being overruled by their non-Notes colleagues. Why? Because Notes remains a proprietary technology. It has more than its fair share of idiosyncrasies, and it needs a healthy value-added reseller market to provide support, technical assistance, application development and training. Many of those resources are stampeding toward the Web. And Lotus, even with IBM's help, can't fill the gap in providing technical support for Notes users let alone technical support for users who integrate Notes and the Web.

The best way to recapture the hearts and minds of the Web-stampeding public is to co-opt the Web by using the Web's modus operandi.

Lotus needs to do what everyone else on the Web has done: make its crown jewels readily available for developers and end users to integrate with their Web solutions. What are Notes' crown jewels? The two that spring to mind are replication and the development environment.

Why not turn Notes from a proprietary technology to an open, Web-based technology? Why not license the Notes replication engine to Netscape for inclusion in its Navigator browser, which has become a de facto standard? What if Web users could experience the Web the way Notes users experience Notes? That way, you could have the Web at your fingertips, whether you were online or off-line. Just think how much more productive we all could be.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is pseybold@psgroup.com.



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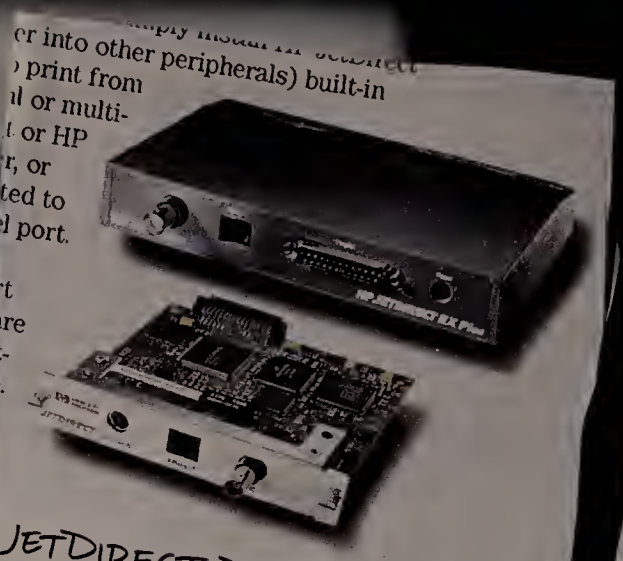

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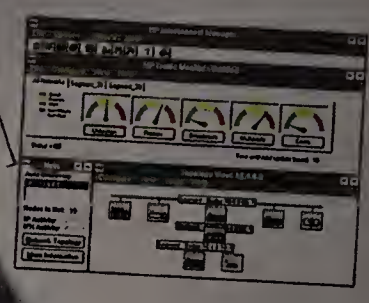

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Hitachi, NEC plunge into U.S. notebook market, **46**

Servers & PCs

Sun shines on 'net files

WebNFS protocol will enable file access over intranets

By Craig Stedman

Its Java programming language is rapidly rising to Internet prominence. Now, Sun Microsystems, Inc. is trying for a repeat on the file transfer side.

Sun last week introduced a specialized file server for workgroups and departments. It includes WebNFS, an Internet-enabled version of the Network File System (NFS), Sun's widely used protocol for giving end users remote access to Unix and LAN files.

The UltraSPARC-based Netra NFS 150 is the first machine to run WebNFS, which Sun claims will be five to 10 times faster than the Hypertext Transport Protocol (HTTP) for accessing files over corporate intranets. Sun plans to put WebNFS into future versions of its Solaris operating system and is releasing the software this month to other vendors that license NFS.

Persuasion

To make WebNFS useful, Sun still has to persuade Web browser vendors to build in support for locating NFS addresses. But several information systems managers who work with NFS said the Internet plans are intriguing, especially for intranets that provide a more controlled environment.

Robertson CECO Corp., a maker of prefabricated steel buildings in Burlington, Miss., is considering linking customers and its outside sales staff to headquarters via the Internet. "If [WebNFS] works the way it sounds, we could manage those applications just the way we do it internally," said Steve Morgan, director of hardware and database technologies.

Having a common file access mechanism also would reduce the number of hoops that IS has to jump through to develop the Internet-based programs, Morgan said. But Robertson CECO doesn't use dedicated file servers such as the Netra NFS 150 and will have to wait until Sun delivers WebNFS in general-purpose systems, he said.

WebNFS could potentially let companies provide dynamic connections to databases and electronic-mail archives on their intranets without having to write custom code to create HTTP links, said Carl Howe, director of World Wide Web services at BBN Corp., an Internet access provider in Cambridge, Mass.

"You could make it a little more like a Lotus Notes environment where the databases change behind the Web server and then use WebNFS to serve the files," Howe said. WebNFS also should be faster than HTTP because the latter protocol needs to open a new TCP/IP connection for each file transfer.

By comparison, NFS "just blasts stuff through," Howe said. BBN uses dedicated NFS servers made by Network Appliance, Inc. in Mountain View, Calif., to send data from a disk farm to its Web servers. The company also is talking with Sun about the Netra NFS 150, he said.

NFS was created in the mid-1980s and is used on almost 10 million Unix systems and PCs, according to Dataquest in San Jose, Calif. WebNFS, which will be formally introduced late this month, enables the software to work through firewalls and proxy servers, Sun officials said.

"Sun can't replace HTTP. Anybody who set out to do that would be shouted off the stage," said Tony Iams, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. But the two protocols could run side by side on servers, with WebNFS providing faster access to distributed files, Iams said.

File under NFS

Sun's Netra NFS 150 file server includes the following features

- **Processor:** 167-MHz UltraSPARC
- **Memory:** 64M to 512M bytes
- **Maximum disk storage:** 25G bytes
- **Users supported:** 10 to 100
- **Price:** $25,295 to $55,000
- **Availability:** July
- **Software:** Web browser-based systems management GUI (pictured); WebNFS implementation for Internet/intranet file access

Users find clear road in migration to RISC

By Michael Goldberg

The 500-page book on changing the AS/400 to RISC may be low on character development, but the plot is a grabber.

Users and analysts say migrating to the 64-bit RISC versions of IBM's AS/400 systems is a relatively painless process: The cookbook-like directions mean users should escape unscathed in the end, usually after a long weekend.

"If you try to do this without following the Road Map [book] exactly, you'll screw it up. I know because I have," said Al Barsa, a systems consultant who has presided over 10 AS/400 migrations to RISC. Barsa is president of Barsa Consulting Group, Inc. in Port Chester, N.Y.

IBM delayed shipments of the new AS/400 models to make sure the RISC version of the OS/400 operating system avoided the firestorm of bug complaints that hit last year's most recent complex instruction set computing (CISC) version, Version 3 Release 1. IBM also needed extra time to have a detailed Road Map in place for users making the switch to RISC, company officials said.

The wait was worthwhile for Arthur Taylor, vice president and chief financial officer at First State Bancorp, Inc. in Caruthersville, Mo. After a merger joined three banks that had been using IBM System/36 minicomputers, First State last month consolidated its operations on an AS/400 Advanced Series Model 500. Performance jumped: An account update procedure that used to take three hours now takes 11 minutes.

Network hurdle

Taylor said the major obstacle in migrating to the RISC AS/400 was building a network to connect two subsidiary banks to the main data center. Moving to the RISC AS/400 by itself "was pretty easy," Taylor said, mainly because his banking applications software from Jack Henry & Associates, purchased 12 years ago for the System/36, ran without a problem. The bank also had to replace its System/36 printer, he said.

Other users and analysts said the most interesting thing about the migration to RISC was that, in most cases, there is nothing remarkable going on.

"In every other case in the history of computing, where the underlying component technology of the system has gone through a change, it's been traumatic for users. This is the first time where new technology has come to a computer and the changes are minor," said Dave Andrews, managing partner at D. H. Andrews Group, Inc., a

RISC, *page 46*

The following methods are available for upgrading to RISC versions of the AS/400. All require software tools.

Method	Type of system	What it involves
Unload/reload	Small system (under 4G bytes of disk)	Reload all user data on new system from tape storage
Replace-a-release	Medium-size system (less than 25G bytes of disk)	Prepare data for new disk format before hardware upgrade
Side-by-side	Large systems for users who want to minimize downtime	Install RISC system to run parallel with existing AS/400 before shifting new system into production

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WHERE DO YOU WANT TO GO TODAY?™

Users feel PC industry's pace

By Bob Francis

Ever get the feeling that the PC industry never slows down? For some information systems managers, it's exhausting just to keep up with products entering the market.

"It's the PC industry, so you expect to see new technologies come out at a fast clip, but the turnover seems to be occurring even faster now," said Bart Everett, deputy systems editor at *The Los Angeles Times*.

But the 400-meter sprint of new products is becoming more of a 60-meter dash as new technologies — including key components such as processors, hard drives, system memory and CD-ROM drives — are being introduced at a rapid pace. For instance, Intel Corp.'s 486 processor was introduced in 1992 and ruled for nearly three years. However, its successor, the Pentium, was on the market about 18 months before Intel introduced the Pentium Pro.

Why the faster pace? First, Intel can push new, faster microprocessors into the market due to more efficient production plants. Second, PC companies are competing to get products and technologies to market faster.

Nexar Technologies' Nexar 7100 *allows resellers to upgrade important components of the PC before it is shipped to end users*

"The best margins for a new PC product are in the first three months, so the faster a company can get those products out the door, the more money they can make on those products," said James Poyner, an analyst at Oppenheimer & Co. in New York.

PC vendors that sell direct have always had a quick time-to-market for new products. Dell Computer Corp. in Austin, Texas, and Gateway 2000, Inc. in North Sioux City, S.D., can often deploy systems with new Intel chips within days or weeks of Intel's new chip introduction. Most of the larger vendors, such as Compaq Computer Corp. or IBM PC Co., have waited several months as products with new Intel processors slogged through the reseller channel to customers.

Changing times

But that is beginning to change.

Larger PC vendors, such as Hewlett-Packard Co., AST Research, Inc., IBM, Compaq and Unisys Corp., are making moves to get new technology to users more quickly. For instance, IBM was one of the first companies to introduce a new four-way Pentium Pro server easily ahead of most competitors.

And a newcomer, Nexar Technologies, Inc. in Westboro, Mass., has designed a PC that allows resellers to upgrade the PC before it is shipped to end users.

"We want to offer companies the ability to upgrade some of the most important components of a PC — the processor, the hard drive, the system memory and cache — without having to open up the PC case," said Albert Agbay, chairman and CEO of Nexar.

Even smaller players are moving more quickly. Last week Unisys became the first vendor to introduce PCs with the Universal Serial Bus, a recently implemented standard that permits connections of up to 64 devices, such as a keyboard, mouse, printer, scanner, speaker and Integrated Services Digital Network line, from one port.

For IS managers, these rapid-fire changes offer a choice of enticing new technologies. But when it comes time to implement a new project, it is often just a question of picking — and sticking — to one technology, said Erik Goldoff, an IS manager at the Centers for Disease Control and Prevention in Atlanta.

"Sometimes you just have to draw a line in the sand and say, 'This is what we're going to go with,' even though you know something faster and better may be there in six months," he said.

New Products

Raritan Computer, Inc. has announced the Guardian series of emulators and converters for PCs, Macintoshes and Sun Microsystems, Inc. computers.

According to the Belle Mead, N.J., company, the Guardian series keyboard and mouse emulators ensure automatic booting and operation of a computer without its keyboard or mouse being connected. The emulators can also convert all keyboard and mouse signals to PS/2 keyboard and PS/2 mouse.

The series was designed to let users remove devices to prevent unauthorized use. It also lets network administrators conserve space around servers by eliminating cluttersome keyboards and mice.

The Guardian series includes four devices: Guardian for AT (for five-pin models), Guardian for PS/2 (six-pin models), Guardian for Macintosh and Guardian for Sun. The series supports 16-bit Windows-compatible sound boards. Prices start at $85.

▶ *Raritan Computer*
(980) 874-4072

Kurzweil Applied Intelligence, Inc. has released Voice 2.0 for Windows.

According to the Waltham, Mass., company, Voice 2.0 for Windows lets PC users combine voice input with keyboard or mouse input. It supports voice input for navigation (driving the Windows operating system) and dictation, which lets users create text and data.

Voice 2.0 features continuous digits capability, which lets users input numeric values rapidly. It is speaker-independent — it doesn't require each user to retrain it to match his voice.

Pricing starts at $695, which includes microphones and software. More information is available on Kurzweil's home page at http://www.kurz-ai.com.

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Autotime Corp. has introduced Hypercable, a parallel cable product for high-speed systems.

According to the Portland, Ore., company, Hypercable addresses "Print Data Overrun" problems and provides error-free, high-speed laser printer connections from 16 to 200 feet.

Autotime's Hypercable *provides error-free, high-speed laser printer connections*

Hypercable requires no external power and doesn't need printer drivers. It is available with a standard 36-pin connector or a 25-pin male or female connector for scan box applications.

Pricing for Hypercable starts at $49 for the 16-foot model.

▶ *Autotime*
(503) 452-8577

Samsung Electronics America, Inc. has unveiled the SENS 810 Multimedia Notebook.

According to the Ridgefield, N.J., company, the SENS 810 Multimedia Notebook features an adjustable, split design, ergonomic keyboard. Configurations feature a 100-MHz Pentium processor, a four-speed CD-ROM drive, an 11.3-in. color screen and an 810M-byte hard drive. It has a primary lithium battery that lasts up to five hours.

Pricing for the SENS 810 starts at $2,999.

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Product short

Compuware Corp. has introduced an Advanced Program-to-Program Communications (APPC) option for its Hiperstation automated testing product. The new feature was designed for load-testing of critical business systems when the mainframe is used as an enterprise server. Pricing for the APPC option starts at $10,375. Compuware, Farmington Hills, Mich. (810) 737-7300.

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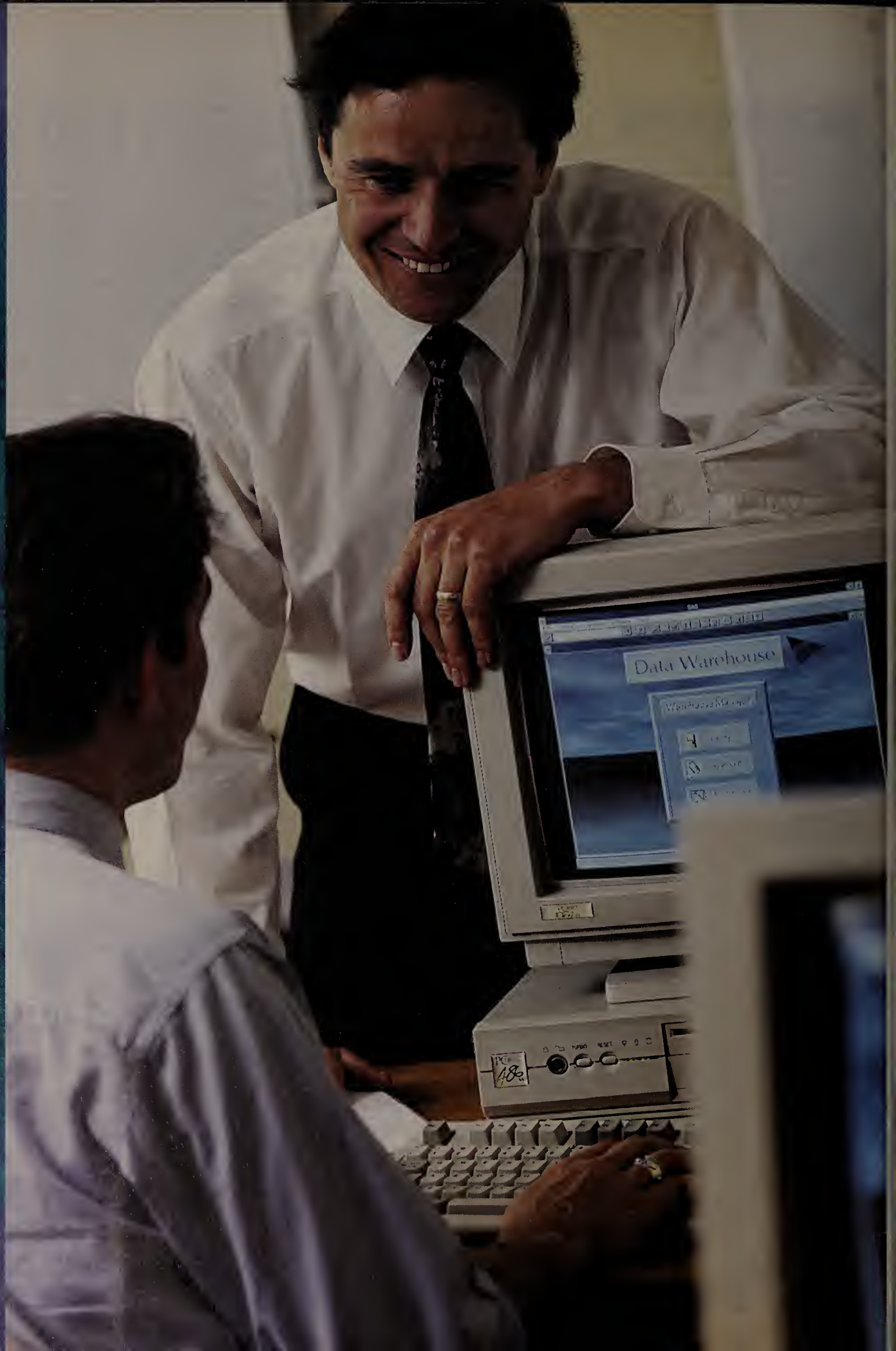

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Hitachi, NEC climb into laptop market

By Mindy Blodgett

Asian companies continued to make inroads into the U.S. notebook market last week with announcements from Hitachi PC Corp. and NEC Technologies, Inc.

Hitachi PC in San Jose, Calif., last week released a midrange line of lightweight portables and a premium line of notebooks aimed at corporate users.

The move comes within weeks of Acer Computer Corp.'s leap into the notebook market with a new line of laptops. The San Jose, Calif.-based company is a subsidiary of The Acer Group in Taiwan.

Other Japanese companies, including Fujitsu Ltd. and Sony Corp., are expected to plunge into the roiling waters of the U.S. portable market this year. Fujitsu is expected to release a line of notebooks with 133-MHz chips and 12.1-in. screens early next month.

In the meantime, Hitachi has ambitious plans. "Our goal is to be a top-tier player within a year," said Craig Rittenhouse, director of product management .

Hitachi, a unit of the Japan-based Hitachi Corp. conglomerate, is attacking the market with aggressive pricing and unusual connectivity, including a built-in LAN interface.

Tough road ahead

But the going won't be easy, industry analysts said.

"These companies definitely have a shot," said John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H. "Fujitsu has a phenomenal brand equity which will help. Hitachi, however, is a very diversified company, so it may be tougher."

Hitachi is touting communications features such as built-in modems — with speeds of 28.8K bit/sec. for data and 14.4K bit/sec. for fax — and LAN ports.

George Staton, an assistant vice president at Commerce Bank in Cherry Hill, N.J., said users like built-in networking. "An integrated modem is nice — you just end up putting one in anyway," he said.

NEC Versa 6000 Series:

Chip speeds: 100/133-MHz

Screen: 11.3- to 12.1-in. thin film transistor

Modem: Internal 28.8K bit/sec. data/fax/voice

Hitachi C Series:

Chip speeds: 90/120-MHz

Screen: 10.4- to 11.8-in. thin film transistor

Modem: Internal 28.8K bit/sec. data modem and 14.4K bit/sec. fax

The new Hitachi notebooks offer the following features:

- The high-end M Series notebooks have chip speeds ranging from 90 to 133 MHz, 8M to 16M bytes of RAM and 720M to 1G bytes of hard disk drive capacity. They range in price from $2,499 to $5,499.
- The midrange C Series notebooks are lightweight (5.3 pounds) and slim (1½ inches thick). They have chip speeds of 90 to 120 MHz, along with 8M bytes of RAM and 720M to 1G bytes of hard disk drive capacity. They range in price from $2,199 to $4,569.

Also last week, NEC Technologies in Mountain View, Calif., released a line of high-end multimedia notebooks. The Versa 6000 notebooks range in price from $5,399 to $6,499.

The NEC notebooks are highly modular, with removable floppy drives, CD-ROM drives and batteries. They have room for a second hard disk drive, so users can upgrade to 2.88G bytes of storage.

The notebooks include two infrared ports that allow wireless links at speeds up to 4M bit/sec. with other infrared-enabled devices, such as printers or desktop PCs.

NEC unveils memory chip for commercial use

By Rob Guth
TOKYO

Japan's NEC Corp. is the first company worldwide to ship commercial samples of a future-generation memory chip

The 256M-bit synchronous dynamic RAM (SDRAM) chip is available in limited quantities for $2,800 each. NEC will begin producing 10,000 units a month in the second half of 1998, the firm said.

PC memory

DRAMs and SDRAMs are used as the main memory in PCs and a growing number of electronic products.

Standard DRAM density is currently shifting from 4M to 16M bits. While 64M bits is the next generation of DRAM, demand for 256M-bit SDRAMs is expected to pick up in the second half of 1998, the spokesman said.

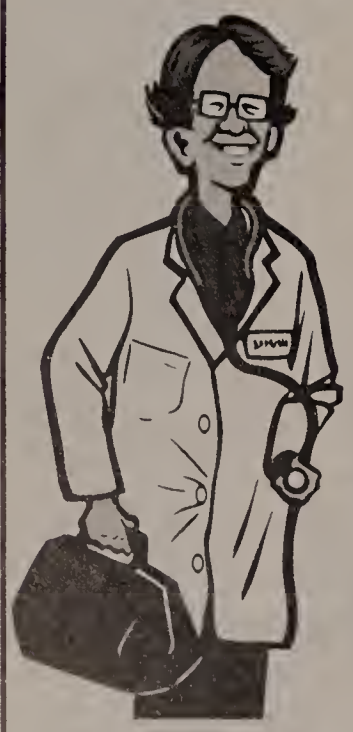
DRAM market leader Samsung Electronics Co. has already shipped 256M-bit DRAMs to the academic community, but NEC is the first vendor to offer the chips commercially, the spokesman explained.

The NEC chip is based on 0.25-micron technology. It has a frequency of 200 MHz and a data transfer rate of 400M bytes per second. Its power consumption in sleep mode is 3 milliamperes.

Guth is an IDG News Service correspondent in Tokyo.

MEDICAL ALERT...

Ulcers Tied to Unix "vi" Editor



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RISC migration

CONTINUED FROM PAGE 39

Cheshire, Conn., consultancy.

Dale Simpson, manager of information services at the LDS Foundation, said his migration to RISC AS/400 Model 50S took extra time because he was an early user. The LDS Foundation in Provo, Utah, is the alumni fund-raising arm of Brigham Young University and affiliated colleges.

However, it was still "painless and quick" compared with other system changes he has made. "Even though we had quite a large system — it took two to three days of loading the old system onto the new system — we never had to do any reprogramming. Everything went smoother than we were used to," he said.

RISC business
Gartner Group has projected that by the end of next year, approximately 25% of installed AS/400s will be RISC models.

One thing users need to watch, analysts said, is the small number of cases in which software programs must be rewritten in a "nonobservable" format to ensure programs are ready for the RISC machines.

This means adding a few hours to the migration process, analysts said.

Briefs

Big backup hits market

Mass storage manufacturer **Procom Technology, Inc.** in Irvine, Calif., has introduced a digital linear tape library subsystem that provides up to 280G bytes of storage, according to the company. Aimed at midrange and high-end networking applications, the systems can back up unattended data at a transfer rate of 3M byte/sec.

UltraSPARC production

Sun Microsystems, Inc. expects to begin producing its UltraSPARC-II microprocessor in the third quarter. The 64-bit chip will run at clock rates of up to 300 MHz and should double the performance of last year's UltraSPARC.

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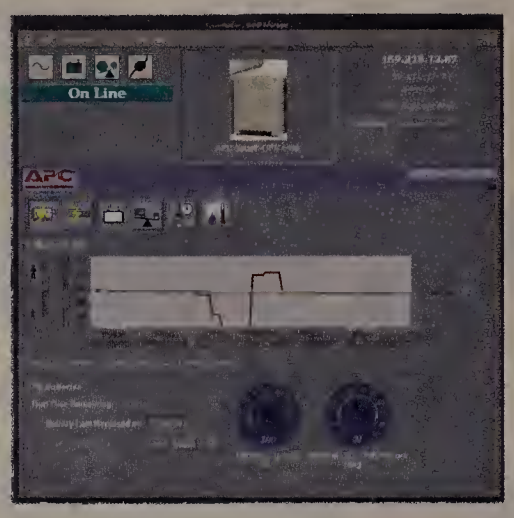

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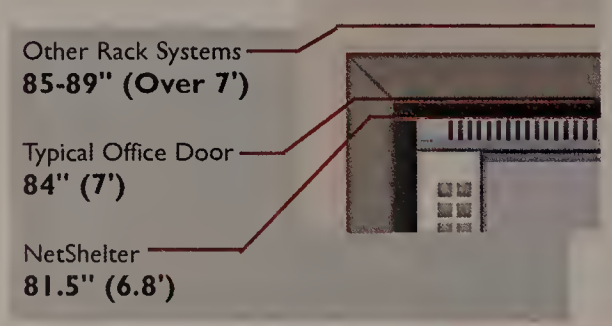

The easy access you want, the security you need

Access to the sides of the cabinet for equipment installation and service is provided in seconds by simply unlatching the locking side panels.

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—Network Computing

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—LAN Times

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Expansion Cabinet	AR 1001	$1699
Compaq Mounting Rails	AR8000	$149
2. CHOOSE SMART-UPS RM UPS		
See Chart Below Right		
3. CHOOSE SOFTWARE		
PowerChute for LAN (Novell,NT,Unix,)		$99-$149
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SmartSlot Accessories	Part #	Description	Price
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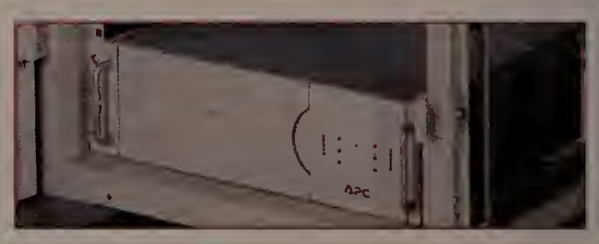
Measure-UPS II	AP9612TH AP9612T	Temp, humidity and external sensors AP9612TH without humidity sensing.	$199 $149
Relay I/O Module	AP9610	Monitoring and control via dry contacts	$179
External Accessories	**Part #**	**Description**	**Price**
SmartSlot Expansion Chassis	AP9600	Allows an additional SmartSlot accessory to be used external to the UPS.	$79
Share-UPS	AP9207	For up to 8 servers sharing 1 UPS	$349
Measure-UPS Switch Kit	AP9813	Monitor cabinet access via Measure-UPS	$99



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Rating	Part#	Runtime	Price
700	SU700RM	5	$649
1000	SU1000RM	11	$829
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2200	SU2200RM	50	$1849
3000	SU3000RM	46	$2679

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Street:.....

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City:.....State:..... Zip:.....

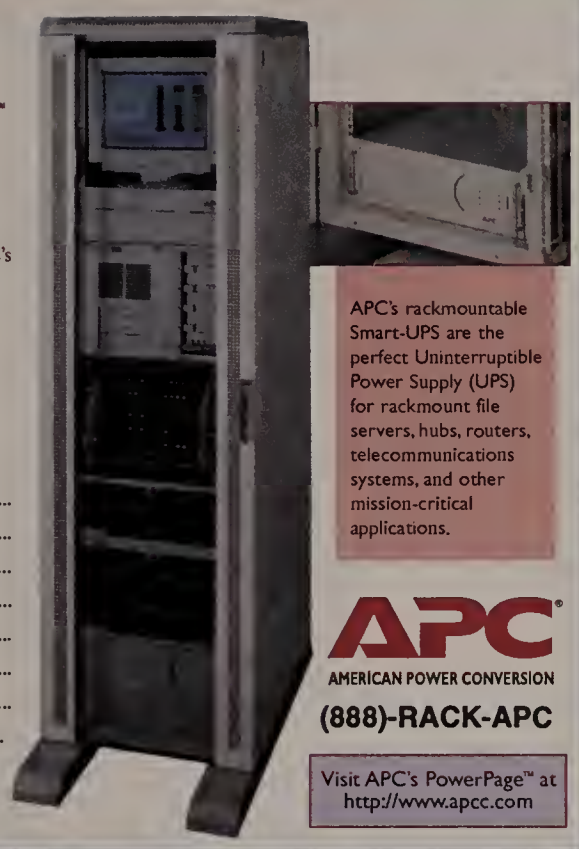
Phone:.....Fax:.....

E-Mail Address:.....

Brand of UPS currently used?.....

# of Network servers on site?.....

Is this your first contact with APC? ☐ Yes ☐ No



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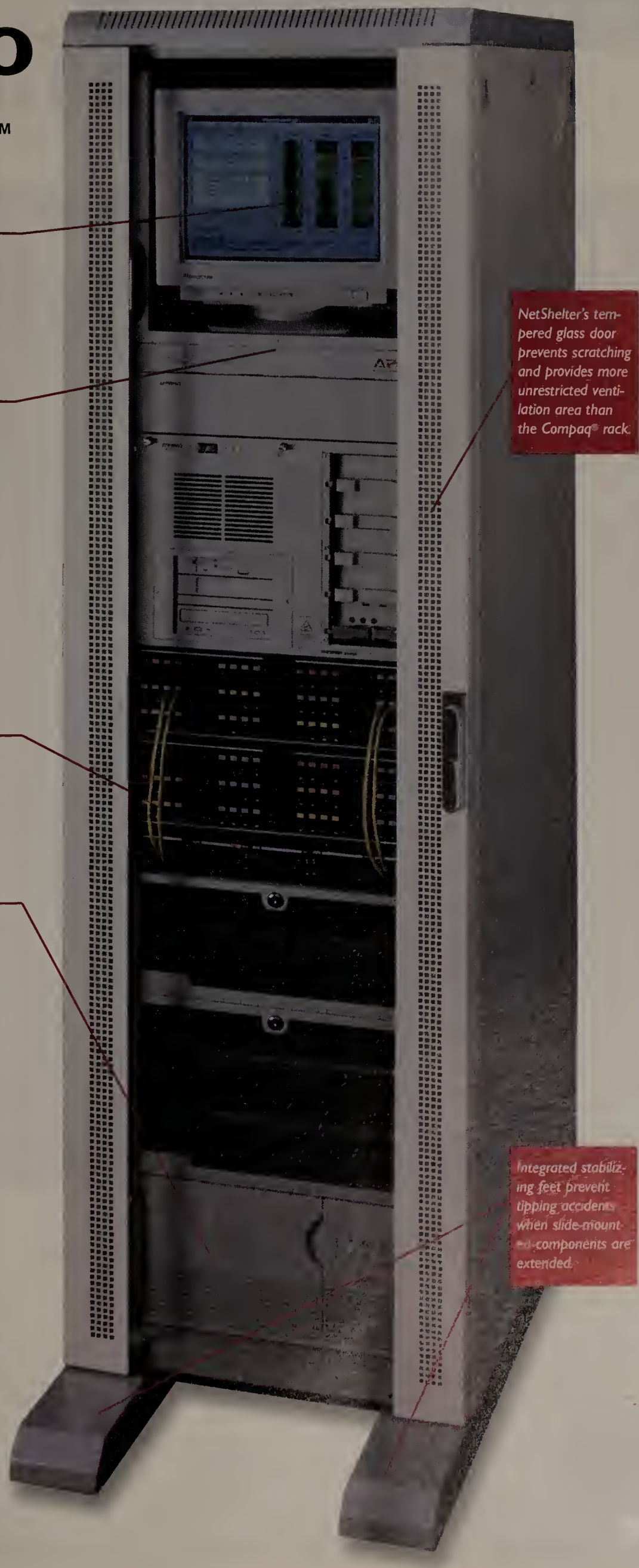
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Homemade accounts payable application pays off, 52

Software

Insurers' app development budgets rising

Majority say it is a priority

By Sharon Gaudin

Many insurance companies are spending more money than ever on application development, spurred by tougher federal regulations and bloody competition.

The majority of insurance companies polled in a recent study by Business Research Group in Newton, Mass., said development will be a top priority.

Bruce Barnes *says Nationwide Mutual will boost application development spending from 29% of the IS budget last year to 44% next year*

More than half of the nearly 800 insurance companies surveyed put more resources into application development last year compared with 1994. And the insurance sector surpasses all other service industries in money spent in that arena.

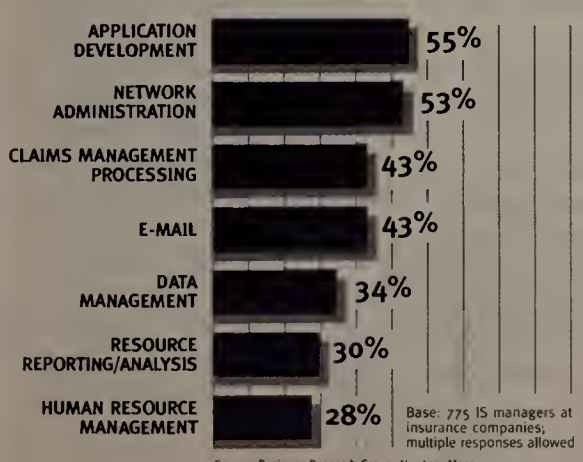
"Companies need new ways to track changes in the system, train agents and keep paper trails for government reporting, so they're spending more money to do that," said Peter Pratt, a director at Business Research Group.

More useful tools

Ann Purr, assistant vice president of information management at the Life Office Management Association (LOMA), an educational organization of primarily life insurance companies, said insurers' information systems budgets haven't increased noticeably. But LOMA members are "spending more money on tools because there are more

Insurers, *page 55*

What types of applications did you spend more money on last year compared with 1994?



Source: Business Research Group, Newton, Mass.

Safer 'net delivery sought

By Gary H. Anthes

Several major software producers are helping to establish a clearinghouse aimed at making software distribution over the Internet fast, easy and secure.

Besides blocking software piracy, the scheme will give customers rapid, easy access to software and easier ways to manage licenses, company officials said.

For at least one user, that would be a double-edged sword. "The easy access would be great; it's clearly a plus," said a software purchasing manager at a large manufacturer who requested anonymity.

But she said she would worry that it might make it too easy for end users to get their own software while bypassing company policies and procedures.

The Electronic Licensing and Security Initiative (ELSI) was founded by Stream International, Inc. in Westwood, Mass.; BBN, Inc. in Cambridge, Mass.; LitleNet in Salem, N.H.; and KPMG Peat Marwick in Palo Alto, Calif.

The group is supported by Microsoft Corp., IBM, AT&T Corp. and other software publishers.

The ELSI alliance said it is developing standards now and expects to have a test clearinghouse in operation by the end of the year.

ELSI intends to establish an independent, vendor-neutral clearinghouse to create and manage electronic "tokens" to provide secure transport and electronic proof of licensing over the Internet. The clearinghouse will also maintain a database of customer license information intended to protect the rights of software vendors and their customers.

North American microcomputer software revenue

GROWTH RATE FROM 1994 TO 1995

PC/MS-DOS	-35%
Windows*	31%
Macintosh	-11%
Other	-2%
Total	12%

* All versions

Source: Software Publishers Association, Washington

In one of several possible modes of operation, a user might receive, say, Microsoft Word by mail from a software reseller or by downloading it from the Internet.

To protect its intellectual property, and to ensure payment, Microsoft would deliver the software in encrypted form.

To use the word processing package, the user would access the World Wide Web site of the reseller and enter payment information such as a credit-card number.

The reseller would then establish a connection between the user and the clearinghouse and arrange for a Microsoft Word token — containing a key to unlock, or decrypt, the software — to be sent to the user.

"The advantage for the end user is the immediate gratification, the reduced cycle time to get the product in hand," said Robin Palmer, national partner in charge of electronic commerce at KPMG Peat Marwick. His company is working with Microsoft to develop ELSI.

And ELSI technology and the license data maintained in the clearinghouse will allow companies to more easily manage their licenses or outsource license management, said Howard Diamond, vice president of electronic marketing at Stream International.

Lotus realizes most users won't leave Office

By Tim Ouellette

Lotus Development Corp. is touting the integration features between Notes and its SmartSuite productivity suite as easier and less expensive than trying to integrate Notes with Microsoft Corp.'s market-dominating Office suite.

Software integration

But users aren't necessarily buying this theory.

Office is practically everywhere — with about an 85% share of the market compared with about 7% for SmartSuite.

Most Notes users run Office without much fuss. National Semiconductor Corp. in Santa Clara, Calif., is a large Notes shop that also runs Office.

"Generally speaking, they work fine together," said Tim M. Crawford, a senior analyst at National Semiconductor.

Crawford said the new library functionality in Notes 4.0 for Office and SmartSuite lets users create Notes databases to store and work on documents started in suite applications.

Lotus officials are quick to point out that they will work with both packages as best they can.

"It is fairly rare to drop Office and go to SmartSuite because of the integration with Notes," said Marty Lechleider, a senior product marketing manager at Lotus in Cambridge, Mass. "The Notes market is mostly Office users. We can't be pigheaded; that philosophy doesn't win in this business. We will be adding more interoperability with Notes and Office."

But the Notes/SmartSuite integration is definitely a strong pull for some users (see chart page 52).

"Notes is the Trojan horse to bring in

Notes, *page 52*

Homemade app pays off

Accounts payable process automated

By April Jacobs

When Ademco went looking for a new imaging application to help automate its accounts payable process, the best one turned out to be homegrown.

Scott Bernstein, a database applications engineer at Ademco — one of the world's largest security manufacturers — said it took about a year for the company to turn an old, labor-intensive imaging application into one that is more accurate and efficient.

"I would be lost without it," said Mo Coyle, an accounts payable supervisor at Ademco. Coyle can answer questions over the telephone when a vendor calls because all the relevant data can be brought up quickly on screen.

Security manufacturer Ademco *spent about a year devising a more accurate and efficient accounts payabte process*

Quick help

For example, Ademco users can get billing information on their IBM System/36-attached PCs in 10 to 15 seconds. The old billing system would have taken up to a half-hour to retrieve an image, Bernstein said.

When a bill comes in, a person in accounts payable working on a PC connects to the System/36.

Besides the basic accounts payable application, there is also a utility on the System/36 that transforms information about the bill and the company sending it into a bar code.

The bar code is used to track the bill through the process.

After connecting to the System/36, the user fills out an on-screen form that contains the vendor's name, voucher number and other information.

Once the process is complete, a dedicated printer issues a cover sheet with the bar-coded information attached.

The user then scans all the supporting information in to the accounts payable system through a scanner attached to the PC.

Supporting documentation might include the original bill, a purchase order and any memos related to the bill. Those images are stored on a Hewlett-Packard Co. 100ST jukebox and can be retrieved later by anyone who uses the accounts payable system.

Besides retrieving information more quickly, there is another significant benefit to the accounts payable system, Bernstein said. "Now that the data is coming off of the bar codes, there's 100% recognition accuracy." He said even with careful checking, hand-filing could result in indexing records in the wrong file about 2% to 4% of the time.

To develop the accounts payable system, Ademco used the latest version of the ImageBasic platform from Diamond Head Software, Inc., Microsoft Corp.'s Visual Basic and third-party software including VisionShape's Bar Code IBX component.

This setup replaced Linked Business Technologies' Easyfile imaging system.

Thomas Koulopoulos, president of Delphi Consulting Group in Boston, said what is significant about component-based architectures such as Diamond Head's — vs. buying a turnkey imaging system — is that developers can implement the various pieces "in an infinite number of ways."

Notes

CONTINUED FROM PAGE 51

the other Lotus products," said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H.

When Notes is on one end, moving data and files among applications is smoother with SmartSuite than it is with Office, observers agreed.

Integration, in this case, means the easier exchange of data between Notes fields and SmartSuite's spreadsheet cells or word processor tables — as well as Notes SQL calls.

Furthermore, there is a Notes application programming interface in SmartSuite.

Still, SmartSuite's sales outpace sales of NotesSuite, the fully integrated Notes/SmartSuite package. Many users like SmartSuite on its own; they aren't buying it just to integrate it with Notes.

Linking SmartSuite with Notes is done on "more of an application-by-application basis," said Alan Baren, manager of Coopers & Lybrand's Strategic Technology Group in Stamford, Conn. "For us, the basic group workings in SmartSuite are a better sell than the integration between Notes and SmartSuite."

One twist

One monkey wrench in the works for Office and SmartSuite is Lotus Notes Components, announced at January's Lotusphere conference and expected by midyear.

Notes Components are new applets residing in Notes that offer many of the basic functions that the larger suites provide, such as spreadsheets, query boxes, file viewers and charts.

Though Notes Components could bite into SmartSuite sales, Lotus sees them as a way to lure Office users to other Lotus products.

"If you have Office and Notes, you will want to buy Components," Lechleider said.

"We've gone to great lengths to make sure the spreadsheet component is Excel-compatible," he said.

Courting Notes users

To lure Notes users away from Microsoft Office, Lotus has bundled Notes and SmartSuite into NotesSuite. Features of the suite include:

- **A common look and feel** across all applications. This includes shared code – for features such as spell checking and dictionaries – to reduce the PC's storage requirements.
- **NotesSuite Applications Collection** to provide template applications for Notes and SmartSuite, such as generating proposals, managing contracts and planning budgets.
- **Support for Notes F/X 2.0** (database field exchange with Notes 4.0); Office supports only Notes F/X 1.0 in Word and Excel.

Novell pins its hopes on GroupWise, NEST

By Tim Ouellette and Laura DiDio

Although the travails of Novell, Inc.'s NetWare are taking center stage these days, the Orem, Utah, firm has two other technology initiatives in place to bolster company coffers.

The first, the GroupWise messaging and groupware platform, is one of the few holdovers from Novell's acquisition of WordPerfect and will be upgraded this year. The second is Novell Embedded Systems Technology (NEST), which the company hopes will extend core NetWare functionality beyond PCs and LANs.

By month's end, Novell will begin general beta-testing of GroupWise XTD, an upgrade to GroupWise 4.1 electronic-mail installations that adds tighter groupware integration and a more distributed client/server architecture than the current GroupWise version.

Messaging

Keeping up

Swift delivery of XTD is crucial since Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes 4.0 are shipping. GroupWise XTD won't ship until August.

On the plus side, GroupWise boasts more than 5 million users, more than Notes or Exchange. But Microsoft and Lotus each have about 10 million users of their E-mail-only products, Mail and CC:Mail, to fuel upgrade momentum in the next year.

"The delay has affected GroupWise, since non-Novell shops are looking at Notes and Exchange now," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass. "But the delay has not necessarily hurt in traditional NetWare shops, [that] like the product and are willing to wait."

"We originally chose GroupWise because it was already out in the first place," said Brian Anderson, an information technology specialist at Auburn University and an XTD beta tester. He said he isn't considering Exchange because "it isn't offering anything we don't already have with GroupWise 4.1."

NEST, meanwhile, remains one of Novell's most ambitious, yet least understood, "futures" undertakings. It aims to embed the core NetWare engine into consumer-oriented devices, including the nascent set-top boxes that meld TV, cable, PC and online service functionality into one device.

NEST generates only about $1 million in annual revenue, but analysts said it could grow beyond its niche status and become a mainstream product for Novell in three to five years.

"NEST has enormous potential; the entire entertainment industry is talking about these set-top boxes. Novell is already working to provide this functionality," said Robert Harbison, president of Network Integration Consultants in Sausalito, Calif.

"Best of all, Microsoft doesn't have anything like this."

Brief

Microsoft unveils browser extension

Microsoft Corp. has released ActiveX Animation Player for its PowerPoint for Windows 95. This free Internet browser extension lets users view live PowerPoint presentations or PowerPoint-generated animated effects in their World Wide Web pages. Using ActiveX Animation Player, PowerPoint users can add animation, hyperlinks, special effects and sound to Web pages. ActiveX Animation Player can be downloaded at http://www.microsoft.com/

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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Networking Products ❒ Yes ❒ No

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E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
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New Products

Westbrook Technologies, Inc. has introduced File Magic Plus 4.2, document management software.

According to the Branford, Conn., company, File Magic Plus 4.2 lets users organize information so that it can be filed, retrieved, revised, annotated, printed and mailed. Users can bring World Wide Web pages into File Magic Plus and replicate database structures.

The product includes Dynamic Data Exchange and OLE capabilities for communication with custom front ends and Windows applications.

Pricing for File Magic Plus 4.2 starts at $2,000.

▶ *Westbrook Technologies*
(203) 483-6666

BrainTree Technology, Inc. has introduced SQL Secure Policy Manager, a client/server application that evaluates rules and exceptions and generates rule violation data reports.

According to the Norwell, Mass., company, SQL Secure Policy Manager lets users manage and evaluate security compliance policies and controls for Oracle Corp.'s Oracle7 client/server database environments. The product regularly evaluates relational database management systems against corporate security standards to reduce the risk of data security exposures.

SQL Secure Policy Manager has a customized set of standard rules that cover many aspects of Oracle security, against which the database is evaluated. It lets security managers and auditors define, implement and enforce security policies through a Windows interface.

Pricing for SQL Secure Policy Manager starts at $7,500.

▶ *BrainTree Technology*
(617) 982-0200

Xerox Corp. has rolled out TextBridge Pro 96, the latest version of its optical character recognition software.

According to the Palo Alto, Calif., company, TextBridge Pro 96 lets users transfer paper documents to the World Wide Web through text conversion, page recomposition and integration with word processing applications. It lets users scan, recognize, save and edit pages in Hypertext Markup Language.

TextBridge Pro 96 includes SoftQuad, Inc.'s HotMetal 2.0, which enables the scanning, recognition and editing of paper-based information for the Web. The product is compatible with Windows 95.

TextBridge Pro 96 costs $260.

▶ *Xerox*
(415) 813-6800

Hyperion Software Corp. has announced Hyperion OLAP.

Hyperion OLAP features an underlying online analytical processing (OLAP) engine designed for large-scale applications. According to the Stamford, Conn., company, Hyperion OLAP provides high-volume, high-performance financial analysis, processes complex questions and analyzes "what-if" questions.

Hyperion OLAP includes production reporting, flexible data input mechanisms and intelligent drill-downs. The product gives users the option of being uncoupled from the server for remote business analysis. It also provides data-loading capabilities.

Pricing for Hyperion OLAP starts at $60,000 per server for 10 users. More information is available on Hyperion's home page at http://www.hysoft.com.

▶ *Hyperion Software*
(203) 703-3000

WorksRight Software, Inc. has announced the RISC version of Per/ZIP4, a postal coding software system for the IBM AS/400.

According to the Madison, Miss., company, Per/ZIP4 is a complete system for adding ZIP+4 codes to address files. The product standardizes addresses at the same time that it corrects or adds the ZIP code, carrier route and the ZIP+4 fields. It also provides online address verification.

Per/ZIP4 works directly with a database of names and addresses; no conversion or preprocessing is required.

Per/ZIP4 is available for a free 30-day trial.

▶ *WorksRight Software*
(601) 856-8337

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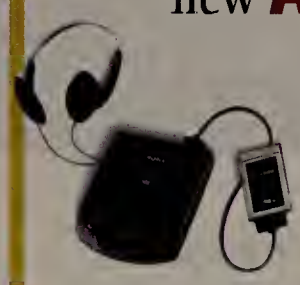

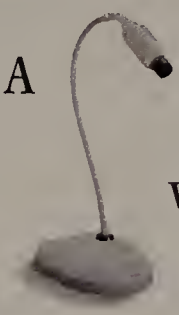

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HBO and Co.

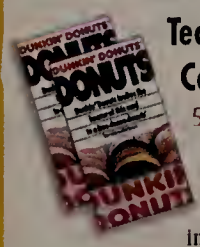
P. Cannone/Sr. System
Great Atlantic & Pacific

J. Schaedler/Sr. Analyst
McNeil Consumer Products

B. Steele/Supv. MIS Operations
Kerr Corp.

Sony Magic Link™ Personal Communicator
1 weekly prize winner

Dunkin' Donuts TechnoTrivia Tuesday Coffee Break
5 weekly prize winners



Dunkin' Donuts gift certificates (or alternative coffee shop) for 20 people that includes coffee and donuts.

B. Bassham/LAN Administrator
Banc One

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L.L. Bean, Inc.

M. McCarthy/DBA Team Leader
Pratt & Whitney

R. Higgins/Sr. Technical Fellow
Federal Express Co.

S. Syville/PS Team Administrator
Morgan Stanley

S. Gallup/Systems Developer
Kmart Corporation

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Books on Java aimed at beginners, advanced users

▸ *Web Site Programming with Java*, by David Harms, et al; McGraw-Hill, Inc., New York; 578 pages; $39.95 with CD-ROM.

This straightforward, easy-to-follow tome guides the reader through how to create a Java applet, gives advice about general World Wide Web site design and planning and provides some general background about the Internet. It is well-organized and an excellent beginner's book. The authors should know whereof they speak; two of them work at Sun Microsystems, Inc.; the third is a writer and computer consultant. The CD-ROM contains a version of Java that works with the example applets and applications that are also on the disc. A beta version of the Java Developer's Kit (Beta 2) is also on the CD-ROM.

A related book from the same publisher is *Essential Java*, by Jason J. Manger (364 pages; $39.95), which focuses on developing interactive Java applications.

It also includes a CD-ROM, with — among other goodies — Java Developer's Kit for Windows 95, Windows NT and Sun's Solaris.

▸ *The Java Programming Language*, by Ken Arnold and James Gosling; Addison-Wesley Publishing Co., Reading, Mass.; 352 pages; $34.38.

Both authors also work at Sun, and Gosling was part of the Java development team. So the book fills you in on the rationale behind why things are the way they are in Java, what's in the language and how to work with it. In general, the book is pretty advanced — it would be helpful for the reader to have some background in object-oriented terms and programming before picking up this one.

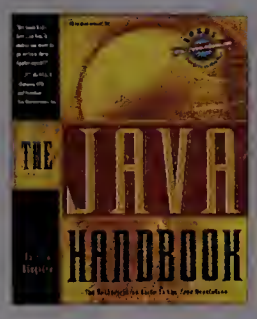
▸ SunSoft Press Java Series, Prentice Hall, Upper Saddle River, N.J.; $29.95 to $39.95.

Each of the four titles in this series occupies a specific niche in Javaland. Each comes with a CD-ROM that includes the developer's kit, sample Java applets and some third-party tools such as Symantec's Cafe Lite. *Instant Java*, by John A. Pew, is just that — it helps you learn to implement Java for quick-hit kinds of things such as animation and "engraving" text. *Just Java*, by Peter van der Linden, gives a lot of background about the 'net and object-oriented programming, with Java stuffed in around all this. There are useful appendices of how to download Java updates and where you can go on and off the 'net for more Java info.

The other books in the series are *Java by Example*, by Jerry R. Jackson and Alan L. McClellan, and *Core Java*, by Gary Cornell and Cay S. Horstmann. The latter covers all Java features and syntax and includes tips for Visual Basic, C and C++ programmers trying to make the leap into Java without getting, um, burned. *Java by Example* has lots of examples of stuff you can do with Java — from how to work with multiple threads and multimedia to interfaces and memory use — with all the source code included on the CD-ROM that comes with the book. The applets can be run under Unix, Windows 95 or Windows NT. This seems like a good one for any Java library.

▸ *The Java Handbook*, by Patrick Naughton; Osborne-McGraw Hill, Berkeley, Calif.; 450 pages; $27.95.

The author, who was on the original Java development team at Sun, wastes a few pages extolling Java's virtues. But he recovers quickly enough and goes on to talk about the basic components of a Java program, the classes that come with the developer's kit and applets that, among other things, make Impressionist paintings of scanned images and do calligraphy. Most interesting, though, are the final pages — the author's account of how Java came to be.



— Johanna Ambrosio

Insurers

CONTINUED FROM PAGE 51

useful tools out there, and the insurance industry has discovered that."

The Mutual Life Insurance Company of New York is part of this move. The company — with 1.4 million active policyholders — is expected to spend more than $1 million on application development tools in the next year, according to E. P. Rogers, vice president and chief information officer at Mutual Life. Rogers declined to say how much the company spent on application development last year but called the current projection a new high.

"We've been talking about this stuff for two to three years, and it's starting to become a reality because the tools are more workable now," said Rogers, who is debating between buying tools from Cognos, Inc. or Micro Strategies, Inc.

Bruce Barnes, vice president of systems at Nationwide Mutual Insurance Co. in Columbus, Ohio, said his company spent 29% of its approximately $100 million IS budget on application development last year.

He said he plans to increase that figure to 44% by next year.

"The financial services side of the insurance industry is a boomtown," Barnes said. Because business is increasing at such a rapid pace, insurers' databases are ballooning, workloads are multiplying and the companies suddenly need development tools to keep up, Barnes explained.

Briefs

IBM's MQSeries links to Composer . . .

IBM and **Texas Instruments, Inc.**'s software unit are working to link the mainframe version of IBM's MQSeries messaging middleware to TI's Composer application development tools. Support for the Open Software Foundation's Distributed Computing Environment technology will also be added to Composer as part of the deal, the companies said. MQSeries lets applications running on different systems exchange data via asynchronous messages and store-and-forward queues.

. . . and to IMS

IBM in June will ship a promised bridge that links the mainframe version of its MQSeries messaging middleware to IMS transaction processing applications. The bridge will be part of a new MQSeries for MVS release that also will let clients be directly connected to the middleware on the mainframe instead of having to go through an intermediary server, IBM officials said. There wouldn't be guaranteed message-delivery, however, because MQSeries client code doesn't include queues for safekeeping the messages.

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Brief

Reports for PowerBuilder

Management Information Technology, Inc. in Menlo Park, Calif., has rolled out SQR for PowerBuilder. It is a production reporting system that can be integrated with Windows applications that are built using Powersoft Corp.'s PowerBuilder visual development system. SQR for PowerBuilder lets applications execute complex reports that are compiled on a remote server rather than within a PowerBuilder application. The report can then appear as part of an application screen. The reporting system costs $699 and will ship immediately.

Some Java applets stink up Web

By Frank Hayes

Think of them as stink bombs on the Internet.

Obnoxious Java applets are beginning to appear on some World Wide Web sites. The applets are small programs that, when downloaded as part of a Web page, make loud noises, crash a Web browser or tie up a computer's processing power with pointless activities.

And though corporate users say they aren't especially concerned about the problem, developers at Sun Microsystems, Inc.'s JavaSoft unit are working to minimize the effects of the obnoxious applets.

Security issues

More conventional security problems are on the minds of corporate information systems shops that use Java, said Michael Brando, an engineering manager at Perkin-Elmer Corp. in San Jose, Calif. "What people are most concerned about is downloading some program that can wipe out their hard drive or do whatever it wants. With Java, that can't happen," he said.

But the obnoxious Java applets can tie up a computer that downloads them using a Java-enabled browser such as Navigator 2.0 from Netscape Communications Corp. or PowerBrowser from Oracle Corp.

Obnoxious applets typically make noises or fill the computer's screen with extra windows. They use simple programming tricks to prevent the user from stopping the applets. Once an applet has tied up a machine, the user usually must reboot the computer to regain control.

For the most part, obnoxious applets are more annoying than dangerous, said Michael Shoffner, a security specialist at Prominence Dot Com, an Internet development firm in Chapel Hill, N.C. Java is specifically designed to prevent downloaded applets from gaining access to files on a user's machine.

But some obnoxious applets can attack and shut down other Java applets, Shoffner said.

Java stinkers

Obnoxious applets cause problems by:

- Locking up or crashing Netscape Navigator
- Opening so many windows that the computer won't respond to keyboard or mouse actions
- Locating and shutting down other Java applets
- Making loud noises and refusing to stop

That indicates a bug in Java's security — one that JavaSoft developers said they are working to fix.

JavaSoft also plans to let users limit how much computing power an applet can use and let users manually kill specific applets, according to Marianne Mueller, a JavaSoft security engineer.

The new capabilities probably won't be added before the next major release of Java, which is due by September, she said.

In the meantime, a little common sense will help most corporate users deal with Java stink bombs, Shoffner said.

"If you're just surfing the 'net and a Java applet hogs up your browser, it's not that big of a deal," he said. "But you don't want to run a Web browser on a machine that's the mail hub for your network. If you're doing something that's got to be secure, then you take extra precautions."

Inferno promises multiplatform OS

By Kim Girard

Lucent Technologies, Inc. hopes to heat up the development tools market with Inferno, a software suite for building distributed applications for devices including PCs, Internet terminals, screen telephones and televisions.

Inferno includes a network operating system, programming tools and a proprietary communications protocol called Styx. A beta version will be released in July, and commercial availability is expected in the fourth quarter.

Inferno features

Lucent's Bell Laboratories unit unveiled details of Inferno last week. It downplayed any rivalry with Sun Microsystems, Inc.'s Java programming language for World Wide Web applications.

Inferno has its own programming language, called Limbo, but supports other languages, including Java.

And Inferno works on any network, not just the Internet, according to officials at Lucent, a recent spin-off from AT&T that is based in Murray Hill, N.J.

"Inferno is more than just a competitor to Java," said Neil MacDonald, a senior research analyst at Gartner Group, Inc. in Stamford, Conn. "It's a tight-kernel operating system with its own protocol designed for multimedia."

But corporate systems developers could become overwhelmed by the number of new development tools, including Inferno, Java and Microsoft Corp.'s Internet development tool ActiveX.

"The problem is there's so much out there already," said Dan Schuffert, a senior systems programmer at Stone Container Corp. in Chicago, which recently began using ActiveX. "If Inferno is actually a competitor to these, how many [development tools] is a company going to learn?"

An Inferno application adapts to whatever machine a user plugs it in to, while seamlessly crossing platforms and providing an identical user interface, Lucent officials claimed. For example, electronic mail could be accessed on an office PC, a screen phone at the airport or a hotel television.

Inferno can run as a standalone operating system on computers that use Intel Corp., Silicon Graphics, Inc. or Advanced Micro Devices, Inc. processors, or it can run under Unix, Windows 95 or Windows NT.

A price to pay

Unlike Unix — also created by Bell Laboratories — Inferno won't be free, said Mike Skarzynski, vice president and general manager at Lucent.

Pricing for Inferno, now in alpha testing, hasn't been announced. But Inferno will be launched at a "significantly lower" price than Windows 95, Skarzynski said.

Inferno supports the following:

Operating systems: Windows 95, Windows NT and Unix

Hardware platforms: Intel, Silicon Graphics and Advanced Micro Devices

Memory: 1M byte

Networking protocol: Styx, which is independent of the communications transport layer

Transport protocols: TCP/IP, Point-to-Point Protocol, ATM or modems

Programming language: Limbo, which has roots in C and Pascal. Inferno also supports Java.

New Products

Natural Intelligence, Inc. has announced Roaster 1.0.

According to the Cambridge, Mass., company, Roaster 1.0 is the first environment for developing in Sun Microsystems, Inc.'s Java on the Macintosh.

Roaster 1.0 includes a fully integrated browser, a class tree and extensive Hypertext Markup Language (HTML) support, including a suite of editing tools.

With Applet Runner support for the Java network class loader, users can retrieve applets off the Internet.

Roaster 1.0 includes full support for Apple Computer, Inc.'s AppleScript. It has an AppleScript class wizard that guides users through building a class.

It features database connectivity classes for accessing Open Database Connectivity-compliant databases

Roaster 1.0 subscriptions start at $299.

▶ *Natural Intelligence*
(617) 876-7680

DataViews Corp. has introduced DV-Centro 1.2, a development tool for building Visual Programming Languages (VPL) under Microsoft Corp.'s Windows NT.

According to the Northampton, Mass., company, DV-Centro 1.2 lets programmers create VPL systems based on custom symbols, shapes and objects connected to data.

DV-Centro 1.2 is based on an object-oriented C++ framework and features a suite of graphical tools that lets users create reusable components.

VPL programs were designed to let users graphically display and update information from databases, generate tested code directly from graphical flow diagrams and simulate network or process behavior.

Pricing for DV-Centro 1.2 starts at $15,000 per development seat.

Users can get more information at the DataViews home page at http://www.dvcorp.com.

▶ *DataViews*
(413) 586-4144

Product short

Dynasty Technologies, Inc. has introduced Dynasty 2.0, which was designed to let developers rapidly build and maintain open, three-tier, distributed applications from a target independent specification. Dynasty 2.0 features automated partitioning, object-deployment facilities and an automated software distribution interface. Pricing for Dynasty 2.0 starts at $7,995 per developer seat. Users can get more information at the Dynasty Technologies home page at http://www.dynasty.com. Dynasty Technologies, Lisle, Ill. (708) 769-8500.

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Intel rolls out latest version of LANDesk, **60**

The Enterprise Network

Switching into high gear

By Bob Wallace

Users had lost patience with Bay Networks, Inc. because the company was years behind schedule for adding switching to its flagship System 5000 hub. Instead, they had to rely heavily on the buggy and expensive 28115 switch to pick up the slack.

But the beleaguered vendor recently announced wares that will finally let its hub users deploy switching throughout their enterprise networks. Bay made its Centillion 100 more versatile, offered users the new 28200 Modular Ethernet Switch, which costs half as much per port as the 28115, and bulked up the System 5000.

The Santa Clara, Calif., company added Fast Ethernet and Asynchronous Transfer Mode (ATM) switching to the Centillion 100, which can already perform Ethernet and Token Ring switching. It also rolled out the 28200 switch at $500 per port and added Fiber Distributed Data Interface (FDDI) switching to the System 5000.

"Bay ... will soon be providing users a full switching menu," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. Bay's strength in the hub market will help it regain lost ground, he added (see chart).

Switching is becoming increasingly important as all aspects of enterprise networks become congested and slow down. The technology can be used to break large LAN segments into smaller subnetworks, which boosts performance.

Switching can also be used to deliver dedicated personal capacity to the desktop for emerging high-capacity client/server applications. The technology has a home in backbone networks, where it can break up bandwidth bottlenecks between switches.

Bay users expressed strong interest in the enhanced Centillion 100 switch.

"We have lots of Ethernet and Token Ring LANs here, so the ability for the Centillion 100 to support Ethernet, Token Ring and Fast Ethernet switching in one box is very attractive to us," said Steve Toce, an engineering consultant at The Travelers Corp. in Hartford, Conn.

Bay expands switching options

The 28200 FastFrame switch has four slots and can be linked to six other units. It's shipping now for $2,995.

Optional switching modules	Price	Availability
8-port switched Ethernet	$2,495	Shipping
4-port switched Ethernet (fiber)	$2,995	Shipping
2-port Fast Ethernet	$1,995	Shipping
2-port Fast Ethernet (fiber)	$2,750	Shipping
2-slot FDDI switching module	$5,995	Q3

The 58000 FDDI-to-Ethernet switching module for the System 5000 will ship in July for $9,995 each.

Modules		
Centillion 100 EtherSpeed 10/100	$6,995	July
Centillion 100 4-port ATMSpeed/155	$8,995	Q3

The addition of the FDDI switching module for the System 5000 means that this high-end hub now supports Ethernet, Fast Ethernet and ATM switching. It couldn't support any of these just months ago. Token Ring switching is due later this year.

"Switching will help us make a lot better use of our System 5000 in a backbone network sense," said Brad Dilkes, a technical specialist at Bayer Rubber, Inc. in Sarnia, Ontario. The firm has been using the pricey 28115 but is now looking at the less expensive 28200 for small buildings.

Bay's System 5000 will stack up well against 3Com Corp.'s LANplex, which lacks ATM switching but has Token Ring switching. It will match capabilities with Cabletron Systems, Inc.'s MMAC-Plus.

Another longtime Bay user said he is keenly interested in the 28200. "The 28115 is a good product, but any time you can get more functionality at a lower price, you have to be thrilled," said John Dubiel, manager of planning at Boston Edison Co.

Deep thoughts by NetReach

Software replaces screen savers with motivational messages

By Patrick Dryden

Managers and human resources directors can supplant their employees' screen savers with network-based motivational messages, thanks to new software from SoftReach, Inc.

But information systems staff may feel trapped in a "Dilbert" cartoon when they remove the flying toasters, Windows options and personally pleasing images from users' PCs.

Instead, NetReach takes over.

Every idle station fetches from a server one of several "attractive images that remind employees of their responsibilities to themselves, their co-workers and their organization," according to the Herndon, Va., company.

Customization an option

NetReach offers sets of 20 to 30 images grouped by themes such as business ethics, discrimination and quality improvement. An upcoming theme development kit will let internal staff customize messages to reinforce training and policies or to recognize the employee of the month.

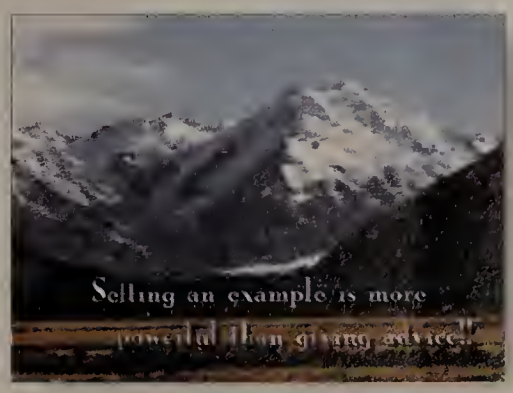
"That's an interesting concept, to take over screen savers under network control. But I'd expect resistance from our user community," said Larry Terrill, director of information services at Targetbase Marketing, Inc. in Irving, Texas.

That's because the market analysis firm has a fairly liberal machine usage policy. "Beyond central software purchasing, we let them personalize their PCs like they do their cubicles," Terrill said.

A NetReach beta tester gladly removed that freedom of choice.

"I don't want games or toys to be the center of attention on business machines," said Jay Kidwell, president of Kidwell McGowan Associates in Herndon, Va. "Now when you walk around the office, you see relatively attractive pictures with positive messages."

The small advertising agency leaves its PCs on constantly so that staff can access them remotely. PC screen savers had caused problems with network and communications software, but NetReach replaced a "sticky mess" with a safe, passive screen saver, Kidwell said.



SoftReach's NetReach *is a screen saver that displays motivational messages across networks*

Most employees will quickly get over the loss of PC customization posed by NetReach, according to Terri Harrell, senior consultant at Human Technology, Inc. in McLean, Va.

NetReach costs $149 for the delivery software and one set of images. Additional sets are available for $99 each.

That's a small amount compared with the expense of lawsuits and judgments when workers claim they weren't aware of company policies in areas such as sexual harassment or plant safety, SoftReach officials said.

Worried by this? Thrilled? Voice your thoughts online in our whiteboard forum.

Start-up shines light on traffic management ills

By Patrick Dryden

Until now, the Fast Ethernet analyzers used by network troubleshooters had a blind spot. And, at best, they could check only 60% to 70% of network traffic.

But San Jose, Calif.-based start-up Shomiti Systems, Inc. recently launched a high-speed protocol analyzer that lets network managers fully analyze Fast Ethernet traffic, including both sides of a full-duplex connection.

Protocol analyzer

Testers claim that Century, a bundle of Shomiti's software and analyzer cards, lets them capture all packets on a shared or switched 100M bit/sec. Ethernet segment.

And now they can tap in to the dedicated Ethernet backbone links among servers and switches that let packets flow both ways in full-duplex mode. By eliminating this blind spot, testers can find problems and verify performance across formerly inaccessible connections.

"No other products out there now can analyze Ethernet traffic completely at either speed for multiple segments, all in a cheap old PC," said Frosty Merkley, senior network manager at Asante Technologies, Inc. in San Jose.

Merkley tested Century on Asante's 300-user internal network, which blends shared and switched segments that operate at both Ethernet speeds.

Until he tried Century, Merkley couldn't track packets as they changed speeds through bridges and switches. "We lost some packets with another analyzer, but this one catches and buffers them all. Now we can focus on one problem and follow it through the network," Merkley said.

A beta tester at Cisco Systems, Inc. praised Century for capturing packets at full Fast Ethernet wire speed, which was previously impossible without an expensive analyzer.

Shomiti takes a modular approach to network analysis that delivers a price/performance edge over the popular Sniffer analyzer from market leader Network General Corp.

"Century is very cost-effective because it really analyzes traffic at line speed for one or more Fast Ethernet connections on any PC," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

Users can start with software only; the Century LAN Analyzer costs $499 and runs on Windows 3.x or Windows 95. With it, they can locally or remotely examine the segment where the PC is connected by a network interface card.

The same software supports up to eight of Shomiti's plug-in analyzer adapter cards. Each Century Media Module costs $7,499 and supports 10M and 100M bit/sec. Ethernet connections. That means users can simultaneously analyze traffic on a variety of segments from the same console.

These adapters don't bog down the PC because each offers an analyzer engine to capture and decode packets, backed by a buffer as large as 16M bytes.

A multiport Century Tap, priced at $399, plugs in to a full-duplex Ethernet connection. Users running the analyzer software can capture and analyze packets flowing in both directions between a server and switch or two switches.

Full speed ahead

Can Shomiti Systems carve out a niche in the protocol analyzer market, which is dominated by Network General's Sniffer?

ANALYSTS AND TESTERS POINT OUT THESE ADVANTAGES:

- Card-based analyzer enables full capture of packets at 100M bit/sec.
- A tap box lets operator view both sides of full-duplex links
- Windows console can monitor cards for eight segments
- Combining cards and Windows software on stock PC yields better price/performance ratio

LANDesk grabs NT coattails

Intel releases latest version of LANDesk Management Suite

By Bob Francis

Users looking to consolidate management of Windows NT and NetWare servers got a boost recently when Intel Corp. rolled out the latest version of its LANDesk Management Suite.

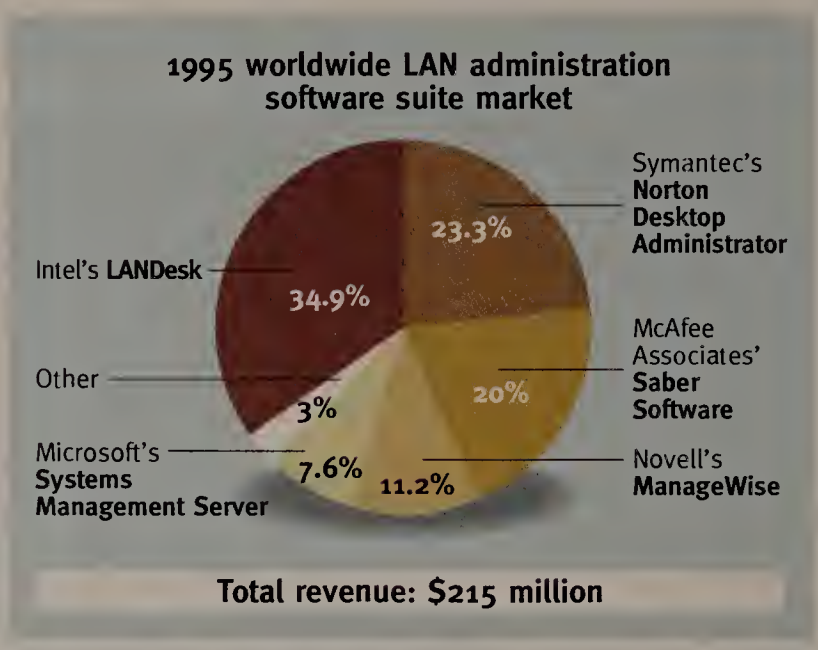
The new version of LANDesk, the market-leading LAN administration tool (see chart), lets network administrators manage both Microsoft Corp. Windows NT and Novell, Inc. NetWare environments from a single console.

Users were pleased with the additions. "We really needed a single point from which to manage our NT and NetWare servers," said Jose Aguilar, a senior systems engineer at Mapco, Inc. in Tulsa, Okla.

Aguilar, who is a beta user of LANDesk Version 2.5, said the version will ease the administration of his company's 16 Compaq Computer Corp. ProLiant servers. "We've been having to deal with those two environments separately until now," he said.

Other features of the package include the following:

- Support for Windows 95 as a client and management workstation.
- Remote management of PCs or servers over the Internet.
- Support for the Desktop Management Interface standard through LANDesk's Alert Management System.
- The ability to conduct inventory and remote-control operations on OS/2 workstations.



Source: International Data Corp., Framingham, Mass.

While Intel, based in Santa Clara, Calif., is the leading vendor in the desktop management market, rivals have beaten it to the punch with Windows NT support.

Both McAfee Associates, Inc., also in Santa Clara, and Symantec Corp. in Cupertino, Calif., have already delivered Windows NT support in their management suites.

McAfee has also moved many of its products from a flat-file database to an Xbase relational database. Users say an Xbase database will make it easier to deal with data from their ever-growing — and more complex — networks. "That's something we'd like to see," Aguilar said.

Intel officials said the company is in the process of moving LANDesk to an Xbase database.

LANDesk costs $750 for a five-node license. Intel offers special pricing for upgrades and to customers who purchase the product in conjunction with other enterprise management platforms, such as Microsoft's Systems Management Server, IBM's Tivoli Management Environment and Hewlett-Packard Co.'s OpenView.

Event manager boosts network coverage

Software manages devices that use SNMP

By Patrick Dryden

Maxm Systems Corp. has announced a partnership that will help users of Max/Enterprise, its event manager for legacy networks, sort out alarms from distributed client/server networks.

Client/server management

The McLean, Va., vendor said it will sell and support Netcool/Omnibus, similar software that filters events from agents in routers and other devices that use Simple Network Management Protocol (SNMP) reporting functions. Netcool/Omnibus was developed by Micromuse USA, Inc. in Dallas.

"This combination could make Max/Enterprise more scalable, so we can manage our legacy environment and the growing SNMP world," said John Lewis, a technology vice president at First National Bank of Maryland in Baltimore.

The bank now uses Max/Enterprise to consolidate reports on status, events and problems from a wide variety of sources: an 8,000-node SNA network, automated teller machines, systems, modems, multiplexers and telephone switches. IBM's NetView for AIX manages the SNMP devices and forwards trapped alerts to Max/Enterprise.

"This setup has worked well for the past year, but the Micromuse tool could speed our trouble-shooting by passing just the root-cause alarms instead of every trap," Lewis said.

Competition remains

Another administrator with myriad network alerts to manage doesn't see much benefit in the product partnership.

Sprint Corp. in Westwood, Kan., chose competing Command Post software from Boole & Babbage, Inc. in San Jose, Calif., and built up SNMP support with links to Hewlett-Packard Co.'s OpenView.

The new Maxm/Microm use combination doesn't provide significant incentive to convert all event management tools at Sprint, said Dave Karthauser, senior technology analyst at the carrier.

Maxm Systems offers Netcool/Omnibus starting at $70,000 and Max/Enterprise starting at $65,000.

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Users want better integration between E-mail, groupware

By Tim Ouellette
ANAHEIM, CALIF.

Electronic mail has become as common in corporate America as the paper clip. But it's time to move beyond plain-vanilla E-mail and merge it with groupware, said attendees at the recent Electronic Messaging Association annual conference here.

Users cautioned that integration of the many communications technologies is a big problem that vendors have been slow to address. It is often still a chore to pass messages among E-mail and groupware systems, for example.

And just as different corporate departments installed different E-mail systems, users at large corporations have chosen different groupware technology.

Oil giant Chevron Corp. has a mix of Lotus Development Corp.'s Notes, Netscape Communications Corp.'s Collabra Share, Microsoft Corp.'s Exchange and intranets throughout the worldwide company.

"We are committed to Exchange and Microsoft Mail for messaging, but we haven't found the answer about what to do with the messaging systems built in to other groupware applications like Notes," said Steve Kiesle, a senior groupware analyst at Chevron Information Technology, the information systems arm of Chevron in San Ramon, Calif.

Users urged vendors to provide better interoperability among their communications products. Now users must depend on expensive integration products from vendors such as Control Data Systems, Inc. and Lotus' SoftSwitch division to make sure the messages get through.

"We can't keep evolving to new product lines," said Cinda Hallman, chief information officer at Du Pont Co. in Wilmington, Del. "We want vendors to think in terms of integrated sets of tools supported by standards."

At the conference, Lotus and Microsoft promoted their respective groupware/messaging products, Notes and Exchange, more than their LAN-based E-mail software, CC:Mail and Microsoft Mail. And Hewlett-Packard Co. recently promised to add Internet-based groupware to its OpenMail messaging product [CW, April 29].

When integration hurdles are overcome, though, users stand to gain the benefits of groupware, including shared databases, discussion groups, group calendaring and scheduling and workflow applications to route documents.

"Due to our rapid growth, we needed to share knowledge, not just information. That is where groupware came in," said Ross Skinner, infrastructure manager at Del Webb Corp., a construction company in Phoenix.

Briefs

Geotek expands network

Geotek Communications, Inc. in Montvale, N.J., has expanded its digital wireless communications network into the Miami, Fort Lauderdale and Palm Beach metropolitan markets. The southern Florida networks are similar to those introduced in Philadelphia, New York and Boston. They provide integrated voice and data communications to businesses with a mobile workforce.

Inside-out protection

Secure Computing Corp. in St. Paul, Minn., plans to acquire **Webster Network Strategies, Inc.** in Naples, Fla., for about $3 million. Secure Computing plans to expand the functions of its Sidewinder firewall software by integrating it with Webster Network's WebTrack, software that monitors and restricts attempts by internal users to access Internet sites.

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James V. Chapman
Strategic Business Manager

New Products

Cubix Corp. has introduced WorldDesk Commuter, a remote node appliance for Novell, Inc. and Microsoft Corp. networks.

The Carson City, Nev., company said WorldDesk Commuter is a remote node/remote control access product. It has a failure recovery feature that reconnects and resumes interrupted or dropped sessions, either on the same WorldDesk Commuter or on a different one. When this occurs, interrupted file transfers automatically pick up where they left off.

WorldDesk Commuter was designed to serve as both password authentication protocol and challenge authentication protocol security servers. It allows authentication through NetWare Bindery Services.

Pricing for WorldDesk Commuter starts at $3,795. More information is available at http://www.cubix.com.

▶ *Cubix*
(702) 888-1000

Citadel Computer Systems, Inc. has released Phantom of the Console, a tool for Novell, Inc. NetWare file servers.

According to the Houston company, Phantom of the Console automates daily server tasks, including loading and unloading NetWare Loadable Modules. The scheduler executes any valid NetWare command or NetWare Command File. It lets the server distribute an unlimited number of tasks to client workstations and control them from the server.

Phantom of the Console also lets administrators enter DOS-like commands to manage files on servers and gives them direct access to the server's DOS partition even while the server is up. It includes features that respond to NetWare system alerts, database messages and other network monitoring packages.

The product has DOS and Windows user interfaces and runs under Windows 95 on NetWare 3.x and 4.x. Pricing starts at $475 per server. More information is available at http://www.citadel.com.

▶ *Citadel Computer Systems*
(713) 686-6400

Lantronix Corp. has introduced LFR8, an eight-port Class II Fast Ethernet repeater.

The Irvine, Calif., company said LFR8 was designed for use as a backbone hub or for backbone network applications. It supports up to eight connections to other repeaters or Fast Ethernet switches and offers interoperability with other Fast Ethernet equipment.

LFR8 can also be used in "server farm" applications, connecting several servers in a data center or within a department.

LFR8 costs $1,095. More information is available at http://www.lantronix.com.

▶ *Lantronix*
(714) 450-7227

General Signal Networks has announced CD/9000 Channel Director.

The Mount Laurel, N.J., firm said CD/9000 Channel Director has 256 ports, letting data center managers consolidate switching into a few cabinets and improve network performance. It was designed as a plug-compatible replacement for IBM 9032 Models 1, 2 and 3. It supports IBM Escon processors and control units.

CD/9000 can support as many as 125 Escon connections simultaneously without contention when the system is configured as a single entity. Using Logical Partitioning, a CD/9000 can be subdivided into smaller, logical subdirectors.

Pricing for CD/9000 Channel Director will be available in June.

▶ *General Signal Networks*
(609) 234-7900

Century Software, Inc. has rolled out TinyTerm 3.2, a PC-to-Unix connectivity and networking tool.

The Salt Lake City company said TinyTerm 3.2 lets users print from a Unix host, store PC files on Unix hosts and download software and files from Unix servers. It also allows automated file transfers.

Pricing for TinyTerm 3.2 starts at $79 per user. More information is available at http://www.censoft.com.

▶ *Century Software*
(801) 268-3088

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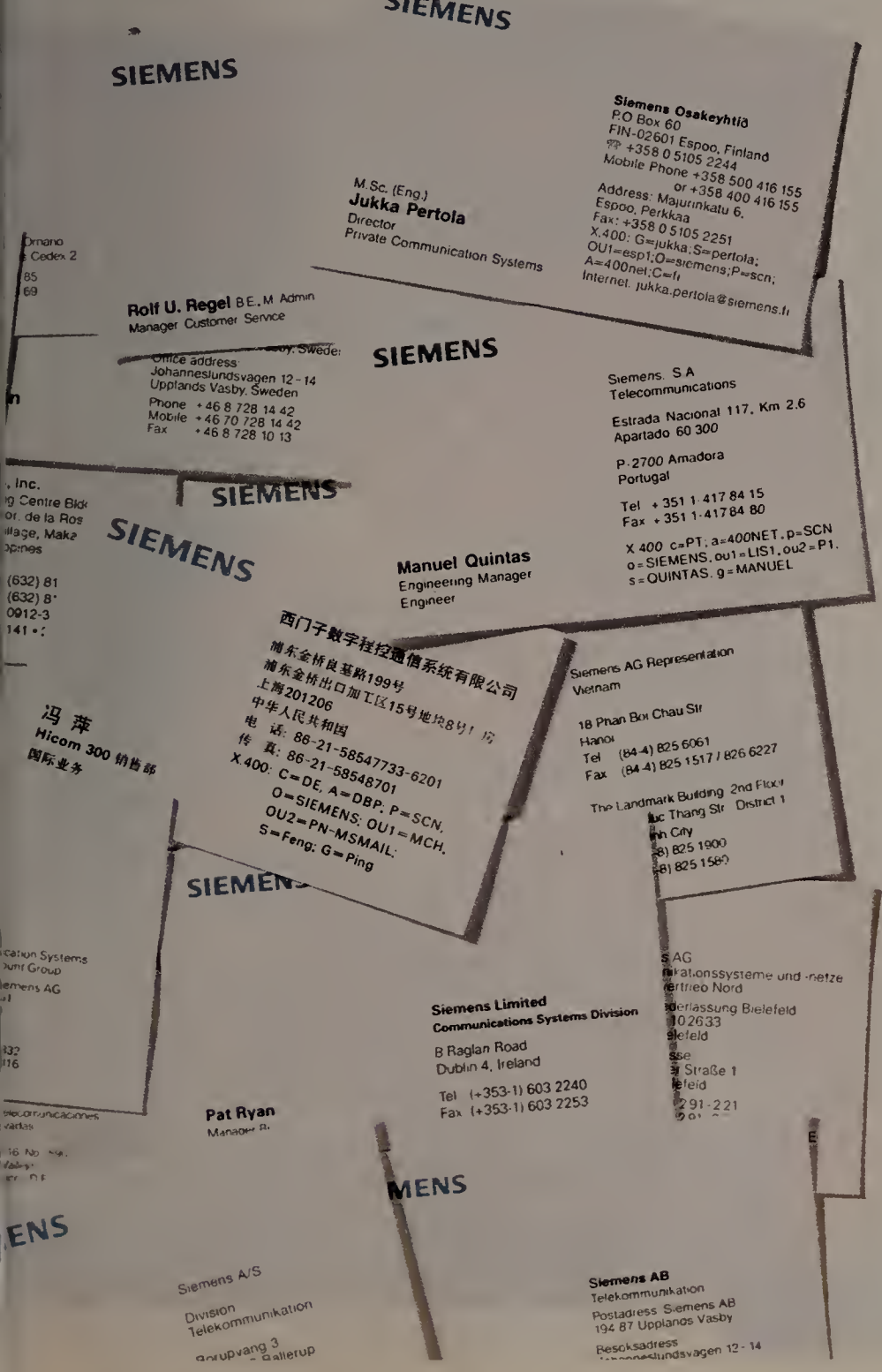

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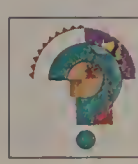

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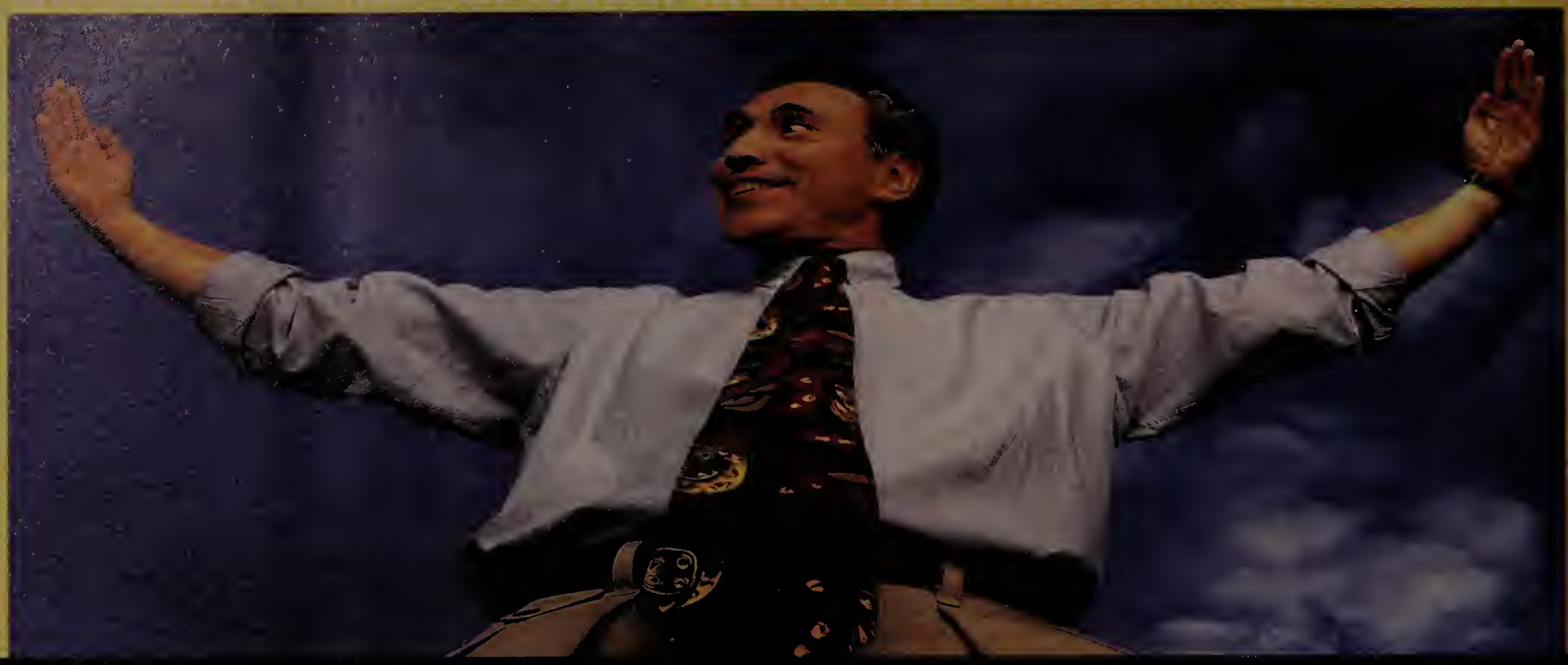

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Air Canada upgrades its Web site to let fliers make reservations over the Internet, **68**

Creating World Wide Web software is a far cry from building weapons control systems for the U.S. Navy's Seawolf submarine. But you don't have to tell Marty DiBattista that.

CW.Internaut

Profile: Marty DiBattista

Software engineer
Lockheed Martin
Syracuse, N.Y.

As technical lead on a Lockheed project to add Web features to a complex chemical information system, DiBattista knows he is a long way from Kansas.

Physically, he has vacated an ultrahigh-security room with a private internal network and no Internet access for a regular old office with a PC and a Web browser.

Spiritually, there is no comparison. "It's like walking out from a dark room," he said.

DiBattista hadn't changed offices through Lockheed's many mergers. Perhaps a sign of the 'net's impact on IS, the one thing that did prompt a move was his assignment to Lockheed's Web project.

Now DiBattista is an Internet surfer dude.

Yet his Seawolf skills in C programming and filling out forms in painful detail "didn't prepare us at all for this Web stuff," he said.

Note that DiBattista is a "we" person — that is, he took no credit for Lockheed's Web endeavors without humbly mentioning the rest of his project team.

Web work "is not as technically challenging as what we did before. You're not figuring out the path that sound is going to take in water," he explained. "But," he added, with great understatement, "things on the Web change a lot quicker than they do with government projects.

"That mind-set to try new things is probably the toughest thing to get used to," he said.

But old skills are not a waste. The government-imposed habit of keeping scrupulous documentation has helped "eliminate chaos" in the Web project so far, he said. Commercial companies should take heed.

DiBattista advocated balanced webmastery: Don't go to the leading edge if it forces users to buy the latest and greatest Web stuff. "So we won't be using Java," he added.

Surf to the Lockheed Martin home page at http://www.lmco.com. It was voted starting point choice and in the Top 5% of all Web sites.

Web-based purchasing systems are the immediate future of the Web in government. "The government's really pushing [electronic commerce] pretty strongly. Get bids much quicker, even do an online auction-type thing for contracts."

By far, the biggest block to Web success is slow thinking. "You have to constantly look around at what technology's coming and what's going," he said. — *Kim S. Nash*

"Things on the Web change a lot quicker than they do with government projects."

Lockheed Martin Web team members (left to right): Marc Goldstein, Marty DiBattista, Andy Yeman, Cheryl McIntyre and Lauren Johnson

Air Canada says Web is the ticket

Site to let fliers make online reservations

By Kim S. Nash

Air Canada wants to swoop in on larger airline rivals with a Web site overhaul that will include, among other improvements, the ability to make reservations via the Internet.

The revamp, most of which is due to be completed by year's end, is being carried out by Air Canada engineers, independent contractors and consultants at Texas Instruments, Inc. The airline has used TI's computer-aided software engineering (CASE) tools for six years; some of the most important pieces of the makeover will involve getting legacy CASE applications to link to the World Wide Web.

Air Canada's goal is to offer customers more ways to get flight, frequent flier and destination information. But first, it must get used to the idea of opening up at least some of its internal systems to strangers. "It's very certainly a new way of thinking about data — to let people outside the company access it," said Dan Ivanov, manager of information technology at the Montreal-based airline.

Good-bye mainframe

Air Canada has started rewriting parts of its largely mainframe-based systems. Frequent-flier customers who use the Web, for example, won't be able to find out how many points they have accrued or what freebies they have earned until the airline refashions parts of its internal databases to accept queries from the Internet.

But Ivanov isn't worried. TI has promised that such a project can be completed "in days, not months or years," he said.

The development cycle might be short, but testing and tweaking the new applications will eat up much more time, Ivanov said. That accounts for his conservative year's end time frame for the project.

Web site integration

While work is going on, Ivanov said, Air Canada will periodically deactivate its public Web site to test and rework the site in-house. Ultimately, Air Canada wants to offer Web users at least as many services as customers who call the airline's interactive voice information system.

Voice limitations

The airline has used voice applications, where customers automatically get questions answered over the phone via dial pads and short spoken words, for several years. But punching numbers goes only so far, Ivanov said. "You can't flip back and forth between menus very easily as a customer."

But the graphical, point-and-click Web can do those tricks.

Meanwhile, Air Canada is looking at ways to use the Internet in-house, in part to replace arduous and expensive publishing work to distribute corporate information to employees.

"Sending 4 pounds of paper or CD-ROMs around the world every month isn't fun," Ivanov explained. Transmitting a file over the Internet for local downloading is faster and easier.

However, the company sees the Internet's limitations.

Some Web-based reservation systems have taken flight — Travelocity from Sabre Decision Technologies, for example — but individual airlines have been slow to follow this route.

"The Internet won't ever be able to replace a reservation system. The response time just isn't there on average," Ivanov said, comparing the 'net to the SNA scheme Air Canada uses internally.

Canadian travel agents are also protesting some airlines' plans to let Web customers bypass agents for ticketing and other services, Ivanov said.

"It's a labor issue that we must work out in time," he said.

Taxiing down the 'net

A sampling of major airlines that have flight information on the Web

	Flight schedules	Reservations	Ticketing
Air Canada http://www.aircanada.ca	Yes	By year's end	No time frame
Alaska Airlines http://www.alaska-air.com	Yes	Yes	Yes
American Airlines http://www.amrcorp.com	Yes	No	Evaluating
Delta Air Lines http://www.delta-air.com/index.html	Yes	1996 or 1997	Evaluating
United Air Lines http://www.ual.com	Yes	Evaluating	Evaluating

World Wide Web Consortium plans major new HTML version

By Marc Ferranti
PARIS

The specification for a major new version of Hypertext Markup Language (HTML) is expected by the fourth quarter, according to officials at the World Wide Web Consortium.

The consortium, which groups together academics and more than 100 vendors in the interest of sorting out Web standards, plans to issue a new specification for HTML that goes beyond the interim Version 3.2 announced at the Fifth International World Wide Web Conference here two weeks ago.

The next, as-yet-unnamed version will add features, including style sheets and advanced image manipulation, according to consortium officials. These will be added to the features in the recently finalized HTML 3.2, which includes tables and the ability to incorporate Java applets and text flow around images, according to consortium officials.

"We expect the next version of HTML to come out within three or four months," said Dave Raggett, a Hewlett-Packard Co. developer based in the U.K. who also is chairman of the HTML workgroup charged with coordinating new versions.

Style sheets provide a standard set of commands, or tags, to dress up the presentation aspects of a page — such as fonts, colored text and headline sizes, according to consortium officials.

That will theoretically help make all Web pages accessible by all browsers, preserving software interoperability on the Web, officials said.

Ferranti is Paris bureau chief at the IDG News Service.

SNAPSHOT

Top 5 Internet service providers

Company	1995 revenue	1996 revenue	Percentage change
MCI	N/A	$97.02M	N/A
UUnet Technologies	$46.78M	$96.5M	106%
Netcom	$31.22M	$96.4M	209%
AT&T	N/A	$90.72M	N/A
PSInet	$22.92M	$68.38M	198%
Total	**$491M**	**$720M**	**47%**

N/A = Not applicable because companies weren't full-fledged service providers in 1995 (all figures projected)

Source: The Maloff Co., Dexter, Mich.

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Mobile industry moves to easier Internet access

By Mindy Blodgett

Features of the Sony Magic Link PIC-2000 Personal Communicator

- 2M bytes of RAM
- 4.4K bit/sec. modem
- Users can send faxes and E-mail via the Internet

Two new products and alliances will make access to the Web and intranets easier for on-the-go professionals.

Traveling Software, Inc. in Bothell, Wash., a manufacturer of remote access software, recently bought Milktruck LLC, a young Internet software development firm in San Mateo, Calif.

By acquiring Milktruck, Traveling Software will expand its efforts to give mobile workers continuous access to all available information on the desktop.

Milktruck Delivery, now in beta testing, is an off-line World Wide Web browser that promises to make access to the notoriously slow Internet less frustrating. Milktruck Delivery is an add-on tool that integrates with most Web browsers and lets users download Internet information to their hard drive for later review while on the road or in the office.

The Milktruck product also lets mobile workers define preferences to designate and deliver new Web site information to their PC or laptop automatically.

Nicola Papp, a developer at Scientific CD Movies in Colorado Springs, said the product saves time wasted sitting on the 'net waiting for images to download.

"With Milktruck, you can fetch the whole thing onto your hard drive," Papp said. "I just don't have time to sit on Netscape."

Traveling Software is working on tweaking the Milktruck Delivery product by adding features such as scheduling. It expects to release the product in June.

Another product easing Internet access for mobile users was recently released by General Magic, Inc., a software developer for handheld computers in Sunnyvale, Calif. For users of the Sony Corp. Magic Link PIC-2000 Personal Communicator or the Motorola, Inc. Envoy Personal Communicator, General Magic has released Presto Links and Presto Mail. They provide mobile access to Internet electronic mail and corporate intranets.

Users can access Web-based information using open standards protocols.

P. Jay Schliesman, senior vice president at Compass Management and Leasing, Inc., said using Sony Magic Link PIC-2000 handheld computers with the new software will create productivity gains in the company's Atlanta-based real estate property management business.

"When we send out people to inspect properties or handle facilities, we need them to be as mobile as possible," he said.

Schliesman said his company is conducting a pilot test that allows handheld computer users to access an intranet home page for information needed in their jobs.

Presto Links and Presto Mail will be available in two months for between $50 and $70.

Briefs

Load your LAN

LANQuest in Fremont, Calif., has introduced an option that lets LANalyzer for Windows users generate traffic to discover bottlenecks and flush out troublesome nodes. LANQuest's Net/WRX-LANLoad, $495, lets users apply a known load of TCP/IP or Novell Internetwork Packet Exchange traffic to a network. This helps them locate problems and plan performance upgrades.

Premenos partners

Premenos Corp. has completed a deal with **Verisign, Inc.**, an Internet security firm in Redwood City, Calif. The partnership calls for Verisign to verify and ensure the identity of Premenos customers who buy one another's products online. In essence, it is a background check for electronic data interchange partners who communicate via the Internet, said a spokeswoman for Premenos in Concord, Calif.

E-mail merger

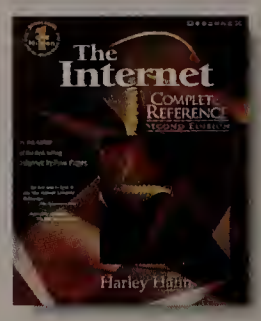
Internet electronic-mail vendors **Software.com, Inc.** in Santa Barbara, Calif., and **Accordance Corp.** in Lexington, Mass., will merge under the name Software.com. Accordance sells Intermail, a high-end message store for Internet-native E-mail systems. Software.com makes Post. Office, which provides message-transfer agents to simplify administration of Internet standard-based E-mail networks. The first products that integrate both technologies will be available by midsummer, company officials said.

Graphical Java

Allen Systems Group, Inc. in Naples, Fla., has announced WebGalaxy, a graphical development environment for generating Java-based applications to run on the World Wide Web. WebGalaxy's development environment, which will run on Windows 95 and Windows NT, lets developers build an application by dragging and dropping blocks of information, including links to existing databases, without writing any code. The system then generates Web pages and Java applets using Sun Microsystems, Inc.'s Internet development language. A free prerelease version of the WebGalaxy development environment can be downloaded from Allen Systems Group's Web site at http://www.webgalaxy.net. A server runtime, which is needed for Internet applications, shipped May 1.

Book bytes: Internet how-to

◗ *The New Internet Navigator,* **by Paul Gilster; Wiley; $24.95.**
This comprehensive reference guide to navigating the 'net contains detailed explanations of how to use search tools, file transfer protocol, Telnet and electronic mail, as well as a directory of Internet resources. Many sample screen shots help newcomers find their way.

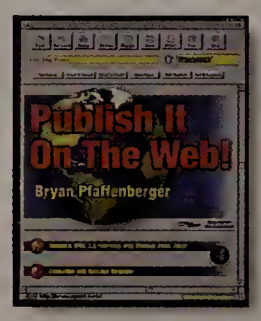


◗ *The Internet Complete Reference* **(second edition), by Harley Hahn; Osborne/McGraw-Hill, Berkeley, Calif.; 836 pages; $32.95.**
This update by the best-selling author of *The Internet Yellow Pages* is huge but not unwieldy. The book is broken down into manageable parts using a variety of iconic elements such as "Hints" and "What's in a name?" Part trivia trove, part guidebook, *The Internet Complete Reference* probably has something for anyone interested in the 'net and the World Wide Web.

◗ *Web Master Windows,* **by Bob LeVitus and Jeff Evans; AP Professional, Chestnut Hill, Mass.; 304 pages; $29.95 with CD-ROM.**
Targeted at beginners, this book promises that you can build your own Web server without really trying. It also promises you can make Web pages in a few hours. The authors take a tongue-in-cheek approach to the topic and include a brief history of the 'net and interviews with some 'net notables.

◗ *The World Wide Web Complete Reference,* **by Rick Stout; Osborne/McGraw-Hill, Berkeley, Calif.; 593 pages; $29.95.**
Meant to meet the needs of the digerati and the digitally dim alike, this guide looks at Hypertext Markup Language (HTML), Web browsers and connections, among other things. Besides technology, it offers chapters on costs of online connections and doing business on the Web.

◗ *Planning and Managing Web Sites on the Macintosh,* **by Jon Wiederspan and Chuck Shotton; Addison Wesley Developers Press, Reading, Mass.; 368 pages; $39.95 with CD-ROM.**
This is a tool specifically oriented toward the Macintosh. Written by a webmaster and the creator of the WebStar Hypertext Transport Protocol (HTTP) server, this book targets beginners. It draws heavily from questions asked frequently on the MacHTTP-talk mailing list. It also looks at systems administration issues.



◗ *Publish It on the Web!* **(Macintosh edition), by Brian Pfaffenberger; AP Professional, Chestnut Hill, Mass.; 436 pages; $29.95 with CD-ROM.**
This book focuses on using HTML 3.0 in a Macintosh environment to publish Web pages. It includes material for beginners and advanced users and goes beyond the technology to discuss some of the basic issues of being online, such as security, copyright laws and standards. It also has a 10-page HTML "cheat sheet."

◗ *Connect your LAN to the Internet,* **by Thomas Madron; John Wiley and Sons, Inc., New York; 356 pages; $29.95.**
Targeted at small businesses, this book may also be useful for IS managers who want to connect departmental or remote office LANs to the 'net. The book focuses heavily on the fundamentals. It discusses the pros and cons of Unix and Windows NT and walks through how to install software and hardware. It is a handholder's guide to the Internet.

— Michael Fitzgerald

New Products

Oberon Software, Inc. has announced Prospero 1.1.

According to the Cambridge, Mass., company, Prospero 1.1 is a visual software tool that can integrate data from a World Wide Web page with desktop applications, relational databases and Lotus Notes.

Prospero's Web Building Block feature lets users access Web data and automatically fill out Hypertext Markup Language (HTML) forms.

The Web Server Building Block feature converts data from other building blocks — including relational databases or word processor templates — to HTML. It includes OLE support.

Prospero 1.1 costs $695.

▶ *Oberon Software*
(617) 494-0990

SRA International, Inc. has announced NetOwl, a World Wide Web search software product.

According to the Arlington, Va., company, NetOwl combines automatic indexing technology with a graphical interface to deliver business intelligence through corporate intranets and the Internet.

It includes features for automatic indexing, hypertext authoring and for building hypertext links between index topics and data files.

NetOwl's NameTag search engine was designed to find and classify key phrases in the text, including personal names, corporate names, place names and dates.

Based on the identified names, NetOwl builds an electronic index on a company's Web server. This index lets users find information on a local corporate site, retrieve information from an outside site or request information from other Internet servers.

Pricing for NetOwl starts at $20,000. More information is available at SRA's home page at http://www.sra.com.

▶ *SRA International*
(703) 558-4700

Network TeleSystems, Inc. has introduced NTS Internet 2.1, a suite of TCP/IP protocol and application software designed for remote access to the Internet.

According to the Sunnyvale, Calif., company, NTS Internet 2.1 lets users manage connections, switch between LAN and remote dial-up connections and launch network applications. It offers Telnet and file transfer protocol.

NTS Internet 2.1 supports multilink Integrated Services Digital Network (ISDN) adapters and provides automatic ISDN configuration for popular adapters. It also includes encryption features for secure electronic mail over the Internet.

Pricing for NTS Internet 2.1 starts at $24.50 per copy.

▶ *Network TeleSystems*
(408) 523-8100

Distinct Corp. has introduced NetRover, a set of Internet utilities for mobile computing.

According to the Saratoga, Calif., firm, NetRover lets users transfer files between two remote systems. It includes a 16- or 32-bit file transfer protocol client that has a Windows 95 look and feel, single-click profiles and firewall support.

NetRover also has Multipurpose Internet Mail Extension support with viewers for popular file types. It includes rapid mailing of encoded attachments for sending large attachments with electronic mail.

NetRover costs $99. Users can find more product information at Distinct's home page at http://www.distinct.com.

▶ *Distinct*
(408) 366-8933

Inmagic, Inc. has introduced DB/Text WebServer, a text-centric data management system for maintaining corporate World Wide Web sites.

According to the Woburn, Mass., company, DB/Text WebServer lets Web page hosts give site visitors the ability to search and locate information quickly without having to navigate multiple layers of hyperlinks. It deploys Web site contents in a database structure to let site browsers run instant queries through thousands of records.

Pricing for DB/Text WebServer starts at $5,000 per server license, with unlimited client usage.

▶ *Inmagic*
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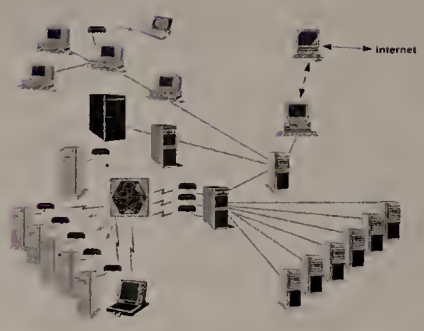

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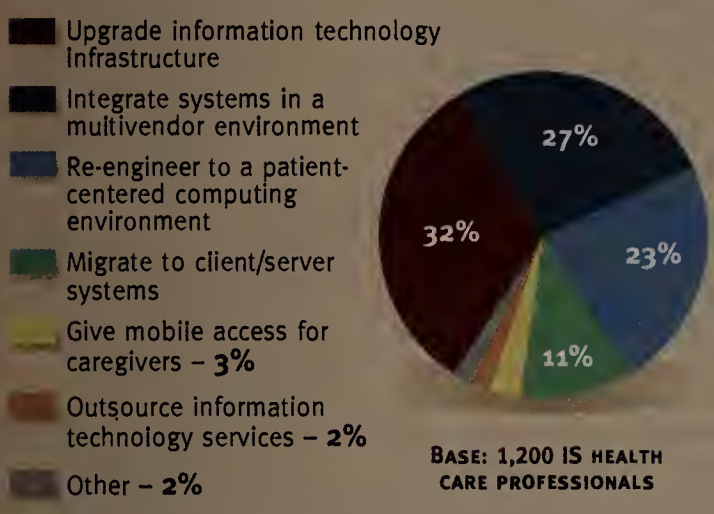
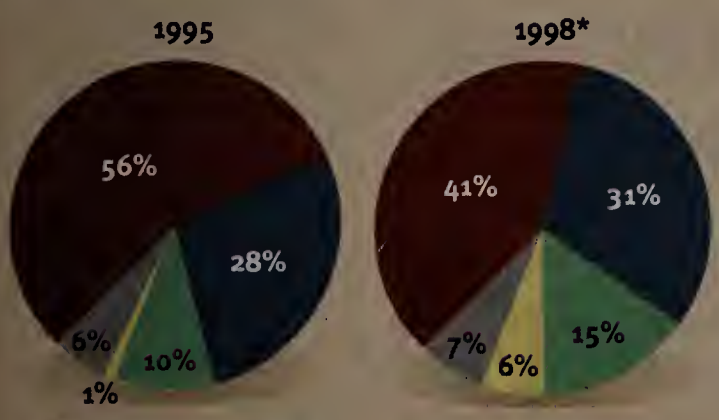


BASE: 1,200 IS HEALTH CARE PROFESSIONALS

Source: Healthcare Information and Management Systems Society, Chicago, and Hewlett-Packard Co., Palo Alto, Calif.

Banking

Transactions by delivery channels



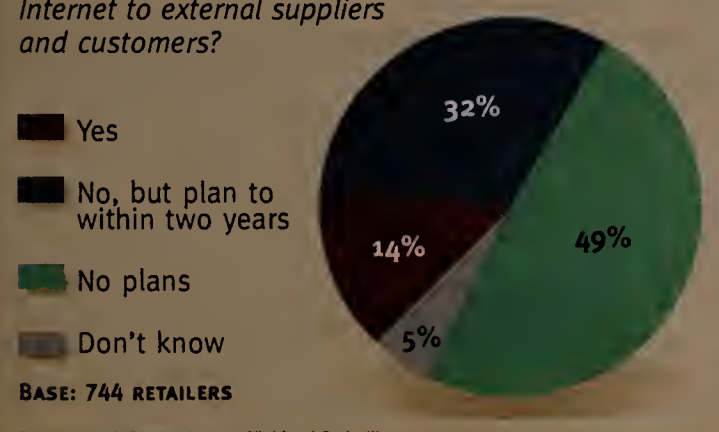
BASE: 40 U.S. HOLDING COMPANIES

1995 figures don't equal 100% due to rounding
*Projected

Source: Ernst & Young, New York, and American Bankers Association, Washington

Retail

Can you send E-mail over the Internet to external suppliers and customers?



BASE: 744 RETAILERS

Source: Block Research, Inc., Highland Park, Ill.

By Thomas Hoffman

Nearly half of all retail banking transactions last year took place without a teller, which reflects the changes banks have made to retain and recoup lost market share, according to a recent banking and technology study.

Most of the changes have revolved around creating interactive delivery channels.

Banks have been losing customer assets to mutual fund companies, credit-card companies and other entities in recent years, said Philip Lawrence, a partner in the Boston office of New York-based Ernst & Young's financial services consulting group. Ernst & Young cosponsored the report with the American Bankers Association.

The report, "Special Report on Technology in Banking: Managing the Virtual Bank, 1995," analyzes the practices and plans of 40% of the Top 100 U.S. banks and 14 of the Top 15 Canadian banks.

For example, home banking, telebanking, automated teller machines and other nontraditional channels accounted for 45% of all banking transactions last year, and that figure should grow to 60% by 1998, according to the report.

IT spending

Banks last year spent $18.7 billion on technology infrastructure — a 14.7% increase over 1994 and $1 billion more than the banks had projected. Much of that additional spending resulted from changes to the banks' IS infrastructures to support new delivery channels and from the year 2000 changes that banks are beginning to make to their legacy application programs, Lawrence said.

About 93% of the banks polled said they plan to offer online banking services by 1998.

In a separate survey of 1,200 health care information profes-

Banks, *page 76*

Eli Lilly and Co. *has streamlined its worldwide help desk operations under one vendor's client/server software*

Lilly finds Rx for help desk

By Julia King

Help has always been a phone call away for some 30,000 information systems users at Eli Lilly and Co. The problem up until recently was knowing which number to call.

"We had 50 or 60 support groups all over the map, [each] with their own telephone numbers," explained Martin Nystrom, an applications integrator at the company's headquarters in Indianapolis.

Black hole

To complicate things even more, each of the far-flung support groups had its own method for logging, tracking and resolving user problems.

Eli Lilly used InfoMan, an IBM mainframe-based help desk system, but most support groups refused to use it on grounds that it was difficult to access and cumbersome to use.

The result was a help desk operation that resembled the Bermuda Triangle. Hundreds of calls weekly vanished into the wide gaps between support groups.

And without a central tracking system, different groups were resolving the same problems over and over, each time beginning from scratch.

To straighten out the support morass, Eli Lilly first implemented standard help desk processes, including common problem severity levels and priority codes that all groups now use.

On the technology side, the company installed Remedy Corp.'s client/server-based Action Request System as a common support backbone.

The software runs on a Sun Microsystems, Inc. server with an Oracle Corp. database. Clients include a mix of IBM PCs that run various versions of Windows and Unix workstations.

Using Remedy's fourth-generation language tools, Nystrom said he and another IS staffer borrowed a Unix server, licensed Remedy's server software for $7,000 and built a prototype of the current help desk system in about three months.

It took off faster than anyone expected, largely due to its ease of use, Nystrom said.

"After a month online in Indianapolis, we started to get calls from groups in Mexico City and Europe. They all wanted to use the system," he said. Additional software costs about $500 per

Eli Lilly, *page 76*

NetWare migration made easier

Utility cuts upgrade time by two-thirds

By Laura DiDio

KPMG Peat Marwick, the Big Eight accounting firm in London, got an unusual but pleasant surprise while migrating to NetWare 4.1.

Its migration to Novell, Inc.'s NetWare 4.1, normally a daunting and perilous undertaking, has been relatively painless. Steve Pierleoni, network manager at KPMG's Information Systems Services (ISS) department, was able to stow his aspirin thanks to DS Standard, a tool from Preferred Systems, Inc. in West Haven, Conn.

Deploying the DS Standard utility has cut migration time by two-thirds, compared with previous network operating systems upgrades done with no tools.

The use of DS Standard also means the company needs five fewer dedicated network administrators to upgrade the ISS department's 4,000 users on 100 NetWare 3.x file servers, Pierleoni said.

Best of all, there has been little or no disruption of network services to users.

Preferred Systems' DS Standard lets administrators create Novell Directory Services (NDS) trees off-line and speed migration from NetWare 3.x to NetWare 4.1.

It is no secret that the downside of NDS is configuring the various branches of the NetWare 4.1 tree and migrating older NetWare 3.x binderies into NetWare 4.1 structures.

Procrastination

Lee Doyle, vice president of LAN research at International Data Corp., a research firm in Framingham, Mass., said NetWare 4.1 migrations can be a "real hassle. Many users approach it with all the enthusiasm of having a root canal: They put it off for as long as they can."

Ultimately, NetWare 4.1's NDS delivers central administration, better access to enterprise services and improved security. The problem is, "NDS doesn't do any of these things automatically — the onus is on administrators to properly and correctly configure their NDS trees," Doyle said.

NetWhere

NetWare 4.1's NDS is an extended database repository of users, network objects and devices attached throughout the enterprise. NDS is especially crucial in large, geographically dispersed networks because it gives the network administrator a central view of every "branch on the tree" — that is, an up-to-the-minute snapshot of all devices in various departmental LANs and an ongoing log of network events.

In the case of KPMG's ISS department, Pierleoni said without DS Standard, it would take two to three days to migrate a large server with 250 users attached and 20G bytes of storage from NetWare 3.x to NetWare 4.1.

Because KPMG's ISS department has 100 NetWare 3.x file servers, it would have taken 200 to 300 days for the team of eight network managers and an outsourcing firm to assist in the migration, Pierleoni said. "Using DS Standard, we cut our migration time from three days to one day per server. And best of all, we were able to do the migration during working hours," he said.

Moving day

DS Standard hasn't evolved to the point where it lets users actually replicate the older NetWare 3.x files on the new NetWare 4.1 file servers, but it creates the underlying directory structure. "It's like building a new house — the empty rooms are there just waiting for all the furniture — in this case, the files to be moved in," Pierleoni said.

KPMG's ISS end users noticed the difference DS Standard made for them. "Or rather, we noticed no difference — we didn't even know there was a migration going on. We just kept on working," said an accountant who requested anonymity. "That's a real switch because normally we'd have at least some downtime before or after the network migration," the user said.

"Now if only my dentist could get something like this," Pierleoni said.

Publisher does disaster planning by the book

By Thomas Hoffman
STERLING FOREST, N.Y.

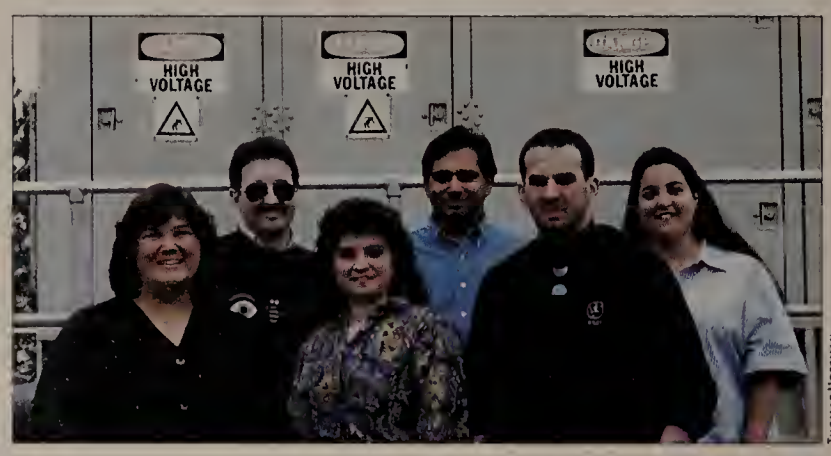
When an electrical fire broke out at a midtown Manhattan office tower last September, 900 employees from John Wiley & Sons, Inc. spilled out of the skyscraper and onto the city streets along with the building's other tenants.

Fortunately for the publisher of academic and scientific textbooks, no one was hurt in the blaze, which was caused when an electrician created an arc between two transformers.

But the event left a lasting impression. "Everyone's hearts were palpitating, and it reminded our executives how important disaster prevention and disaster recovery is," said Leslie P. Shenkler, manager of technical planning for the New York-based publisher.

Not that Wiley's information systems staff had to be nudged. The group tests IBM AS/400 and client/server systems at IBM's business recovery facility here every six months.

In fact, the publisher recently completed 48 hours of testing on a battery of AS/400 and client/server operating systems and applications, including its AS/400-based order entry, warehousing and financial systems.



THOMAS HOFFMAN

The IS staff at John Wiley & Sons *(from left to right): Leslie P. Shenkler, Don Embler, Rachel Fiore, Emiliano Perez, Richard B. Walker and LuAnn P. Cipolla of IBM*

The publisher also tested its client/server-based Da Vinci Systems Corp.'s electronic-mail systems, which are used to handling approximately 10,000 daily messages among editors, authors, literary agents and others who do business with Wiley in North America.

Disaster recovery

Because prepress communication among players in the publishing industry is vital, E-mail "has become a critical part of our business," said Richard B. Walker, a network services manager at Wiley in New York who helped Shenkler replicate a Novell, Inc. file server for Da Vinci E-mail at the IBM facility.

In fact, Wiley installed an X.400 backbone network last month to support the other E-mail systems it uses to communicate with writers and editors in foreign countries, Walker said. The publisher plans to run contingency tests on those systems, which include Lotus Development Corp.'s CC:Mail and Qualcomm, Inc.'s Eudora software in October, he said.

Wiley's bent toward client/server recovery reflects how IS professionals are beginning to appreciate the importance of backing up their mission-critical distributed systems, said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass. "The traditional market for the mainframe is spreading across the network," he said.

Wiley's AS/400 testing is just as critical because these back-office applications support 800 of the firm's 1,200 end users in New York.

By conducting regular disaster tests, Wiley also minimizes the likelihood of surprises should a real disaster strike, which fortunately for the publisher has never occurred. For example, in its most recent test, disaster recovery team members realized they should have tested a bridge that links its AS/400-based OfficeVision E-mail with its Da Vinci mail system — a function that will be added to the forthcoming October tests, said Don Embler, manager of systems engineering at Wiley's Somerset, N.J., office.

"Our long-term philosophy is to build off each test and incorporate those findings into the next test," Embler said.

Briefs

Rubbermaid puts lid on services pact

Rubbermaid in Wooster, Ohio, signed a 10-year information technology services agreement with IBM. Under the agreement, IBM will create and manage a common, global information system designed to provide real-time interfaces among all Rubbermaid sites. The system will be based on SAP AG software and IBM RS/6000 SP system technology. Terms of the deal weren't disclosed.

New 'open' specs

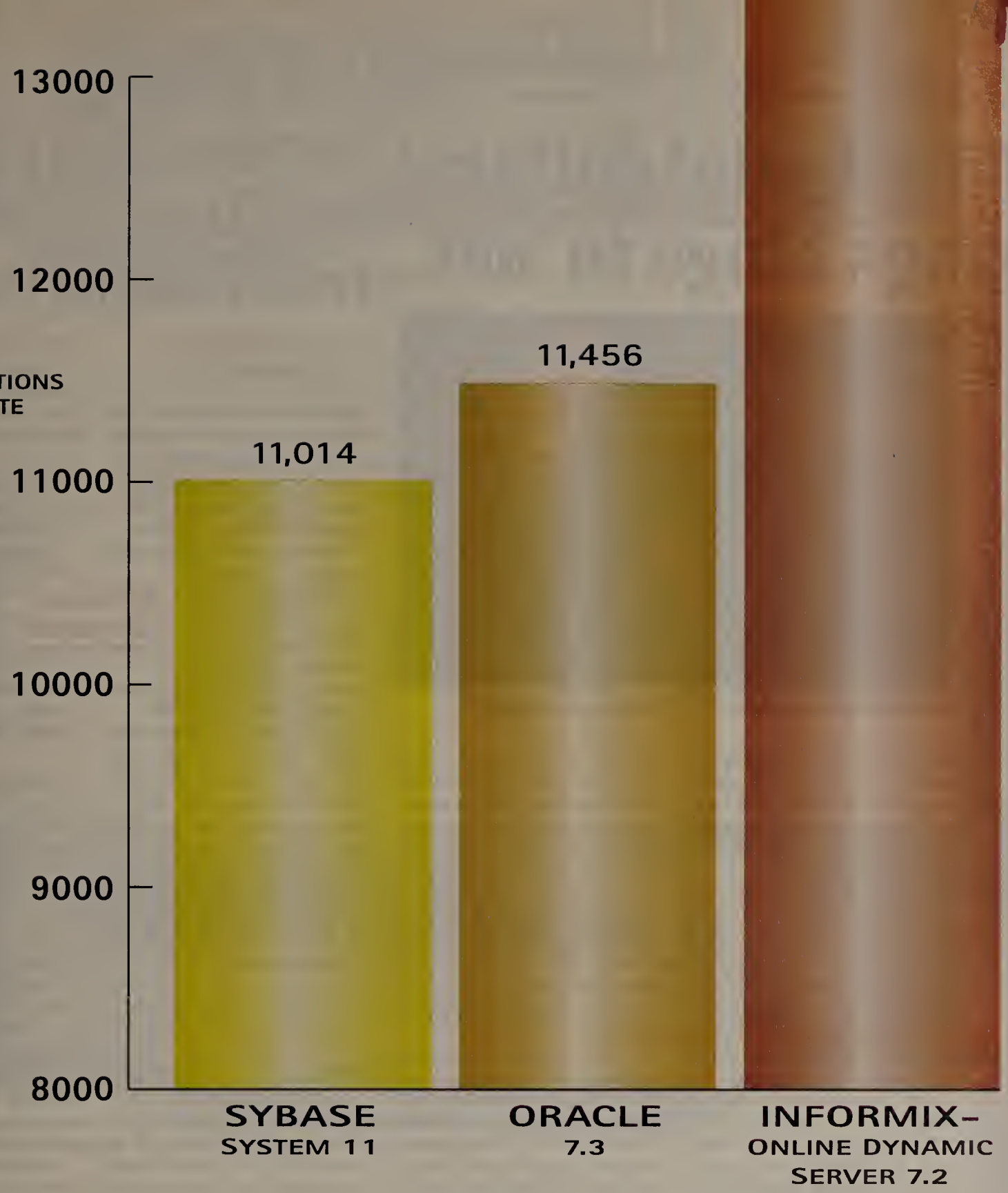
The Open Group, which was formed earlier this year by the merger of X/Open Co. and the Open Software Foundation, plans this week to announce a new set of security specifications for commercial systems vendors to follow. The X/Open Security specs cover base security functions, such as passwords, plus authentication for cross-platform communications between systems running Unix, Windows NT, OS/2 and other operating systems, officials said. However, vendor compliance will initially be on a word-of-honor basis because X/Open hasn't finished developing a test suite yet.

SIM appoints new executive director

Steven A. John has been named executive director of the **Society for Information Management** (SIM), a user group of 2,700 senior IS executives. Since joining SIM in 1994 as associate executive director, John has been involved in the day-to-day management of the group.

Lawson names chief technology officer

Peter C. Patton was named to the newly created position of chief technology officer at **Lawson Software** in Minneapolis. Patton, who holds two patents in the automatic generation of business software applications, had been vice provost for IS and computing at the University of Pennsylvania.



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Dialing for digital dollars: Firm brings bingo to 'net

By Mitch Wagner

To the uninitiated, the Internet is a mess of acronyms: FTP, HTTP, WWW and URL. Now, Electronic Gaming, Inc. hopes to add some more noodles to the alphabet soup, spelling out B-I-N-G-O.

Since February, Electronic Gaming (EGI) has run a site on the Internet to play cash-stakes bingo in affiliation with bingo games held at 52 American Indian reservations nationwide. Internet surfers log in to EGI's BetNet site at http://www.betnet.com, register and supply credit-card or bank-account information. They then buy bingo cards for $5.50 for three cards. Two games are held each day.

Up to 600 people can play on the Internet each game, with prizes up to $5,000 each night. Players also become eligible to participate in a $1 million drawing. So far, the game is being conducted as a pilot program, with only about 100 people playing each night. But this month, EGI plans a nationwide launch with an advertising blitz.

Overseas shuffle

Other gambling sites on the 'net are run outside the U.S. but can be accessed from this country. InterLotto at http://www.interlotto.li/ is run out of Liechtenstein. Interkeno at http://www.interkeno.com/ is run out of Gibraltar.

"We're in the bingo business," said Gary Watkins, EGI president. "The Internet enables us to play the game not just on Indian reservations, but anywhere in the U.S."

The information systems managers who built the site at EGI faced an unusual challenge in complying with gambling regulations by the National Indian Gaming Commission, a federal agency.

STEVE JENNINGS

EGI's President Gary Watkins: *'We're in the bingo business'*

Playing by proxy

The Indian gaming Regulator Act of 1988 permits Indian nations to run gambling operations — but only if they physically take place on Indian reservations. Last year, the National Indian Gaming Commission, which regulates Indian gambling, interpreted the act to permit playing by proxy — a player hires someone to play for him.

The proxy rule was the loophole that allowed Indian nations to run gambling operations nationwide via the Internet. Before each game, a proxy player plugs a notebook computer in to a Novell, Inc. NetWare network running at the Tulsa Creek National Bingo Hall in Tulsa, Okla. The proxy player downloads the orders for the Internet bingo players, unplugs and goes into another room where the games are actually played. He sits with the conventional bingo players and records the play on a notebook computer.

"If one of the Internet players wins, the proxy stands up and yells 'Bingo!' and stops the game," Watkins said. The Web server runs on a 133-MHz Pentium with 64M bytes of RAM and a T1 line from Netcom On-Line Communication Services, Inc.

Two EGI engineers worked for about a month to get the connection up and running. The server software is Netscape Communications Corp.'s Commerce Server. The total expenditure on the project was about $400,000.

The Web server machine also runs a proprietary bingo program created in-house. The program tracks who is playing and winners and losers. When users check in to get the results of their game, the program downloads a Java applet to the user's browser, said Mike Hartman, software engineering manager at EGI.

Gambling has a small, steady future on the 'net, said Scott Smith, an analyst at Jupiter Communications.

"I can't see any reason why it wouldn't work — it has a nice addictive quality to it that will bring people back," he said.

Service woes prompt Fuji-Xerox to break from Compaq Conturas

By Angela Prodromou
SYDNEY, AUSTRALIA

Fuji-Xerox understands the pitfalls of notebook computers. Failure rates as high as 30% and inadequate service have provided a salutary lesson in the problems of equipping a mobile sales force.

Fuji-Xerox plans to dump one of Compaq Computer Corp.'s service providers because of the "shocking service" experienced during the repair of faulty Compaq Contura notebooks, the company said.

Notebook computers

Ian Morpeth, Fuji-Xerox's information systems manager, said since the the company purchased the 130 Conturas in late 1994, repair turnaround per notebook took "anywhere from two to 90 days, with an average of seven days. We should not have been receiving 30% failure — and when they did fail, we should have had them fixed a heck of a lot quicker," he said.

While most companies expect a 3% to 4% failure rate with desktops or notebooks, Morpath said the 30% level became more frequent in the past eight months.

According to sources, hard drive controller failures and inconsistencies with screen output were the most common recurring problems with the company's batch of Contura notebooks.

Although costly repairs of the notebooks were covered by warranty, the delays resulted in Fuji-Xerox sales representatives being without systems for several weeks. That downtime created a loss of "business opportunities," Fuji-Xerox insiders said.

Fuji-Xerox's existing service provider is unaware of losing the account. "We now have a single, national service provider who can negotiate on our behalf" with Compaq, Toshiba America, Inc. or IBM, Morpeth said.

Pointing the finger

When Fuji-Xerox experienced these problems, Morpeth said the service provider would blame delays on a lack of Compaq spare parts. Meanwhile, Compaq would insist that, like 85% of cases, the service provider would receive the spare parts on the same day.

Morpeth said he wanted to continue doing business with Compaq, "and we do not want anything to jeopardize that. We've had some issues, and they have been resolved, but there is absolutely no way we would be buying any more Conturas."

Prodromou writes for Computerworld Australia. *This story is excerpted from that publication.*

Eli Lilly

CONTINUED FROM PAGE 73

user. The result has been a much more cohesive help desk.

"What users see is a far more organized support network. They have one number they call and then, magically, somebody from a support group calls them back with an answer," said Rick Monroe, manager of information technology customer services at Eli Lilly.

One unanticipated effect has been that calls to the help desk have more than doubled from about 5,000 to 13,000 calls per month since the new system was installed just under a year ago.

But the increased number of calls isn't necessarily due to an increase in user problems, Eli Lilly managers said. What's more likely is that the problems existed all along, but users didn't trust the help desk to fix them.

"Our customers had less faith in the help desk because when they called, they were routed to other groups with different tracking software. They might not get called back, or the help desk [wouldn't] have a record of their problem when they called us back," said Laura Bickle, desktop support team leader.

"Now, when their trouble tickets are passed from group to group, they're tracked," she said.

Nystrom said the company plans to use the Remedy backbone system to track desktop assets companywide and configuration changes in users' desktop equipment.

Banks

CONTINUED FROM PAGE 73

sionals, 55% of the respondents said they use the Internet for online clinical research services, and 33% said they use it for electronic-mail communications among physicians.

Health care study

The Seventh Annual 1996 HIMSS/HP Leadership Survey, conducted by the Healthcare Information and Management Systems Society and Hewlett-Packard Co., showed that more than half of the respondents believe managed care, and its pressure to control costs, will significantly drive computer investments.

In the health care study, 48% of the respondents said they believe consumer access to online healthcare information and services will be the most significant healthcare-related computer development to affect the average consumer in the next three years.

Eighty percent of the respondents said they expect their information systems budgets to increase during the next two years. Twenty-five percent said they expect their IS budgets to increase 50% or more.

Meanwhile, the retail industry has been in a three-year long malaise, fueled by high consumer debt, an uncertain economic climate and poor retail management — the latter of which is borne out in a recent retail study.

For example, of the 774 retail executives interviewed for the survey, only 11% of retailers said they use the Internet or other electronic sales channels. But 32% said they expect to make sales electronically in the next one to three years. The unnamed poll was conducted by Block Research, Inc. in Highland Park, Ill. It was sponsored by IBM.

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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
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DEPARTMENTAL MANAGEMENT
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OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1–9	❒	❒

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70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner,General Mgr.
12. Vice President, Asst. VP
13. Treasurer,Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
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OTHER PROFESSIONAL MANAGEMENT
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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	1. At this location	2. Entire Organization
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C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1–9	❒	❒

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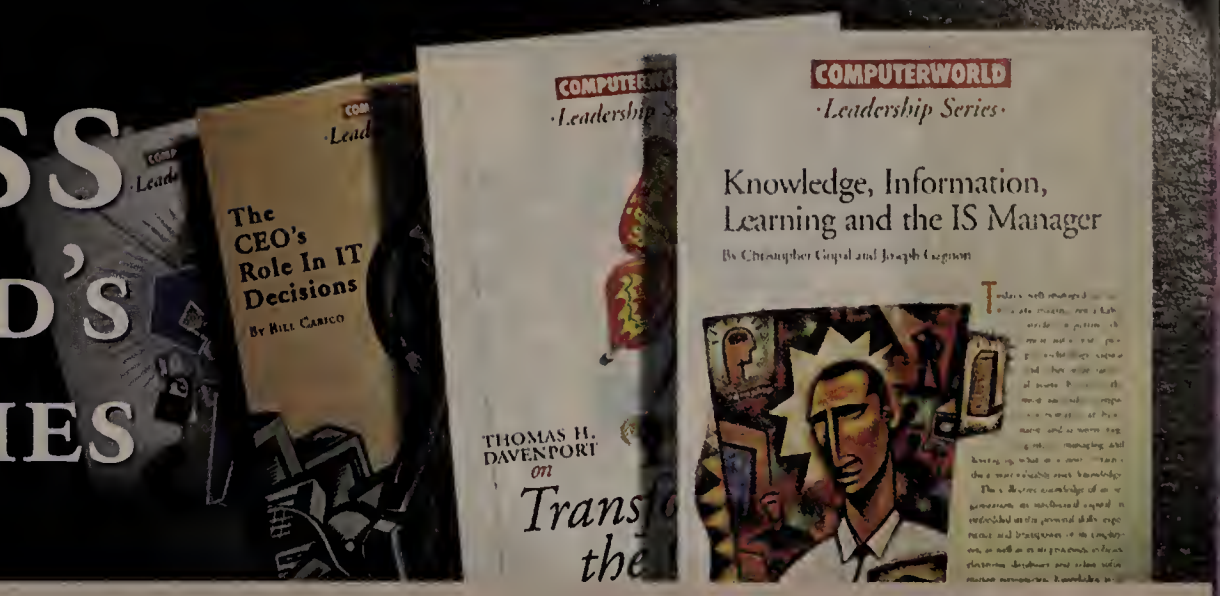

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BY CHRISTOPHER MEYER
Chaos and the IS executive

In this issue of Computerworld: Chaos and the IS Executive

When the subject of chaos, or complexity theory, comes up, most CIOs wince and say, "No thanks, more chaos is the last thing I need." Leadership Series author Christopher Meyer thinks differently. He argues that complexity theory should be a part of every IS executive's toolbox. Citing examples that range from General Motors Corp. and Deere & Co. to Swiss Bank Corp. and Citicorp, Meyer explores the potential this new field has for cutting costs and boosting productivity. In many of these early examples, though, the CIO has played a marginal role. It's time for that to change, Meyer says.

To request a copy of previous Leadership Series articles

Contact Sharon Bryant, Computerworld reprints manager, (508) 820-8125, fax: (508) 875-0733, or contact her at sharon_bryant@cw.com. Copies of previous Leadership Series articles are available for $4 each plus postage.

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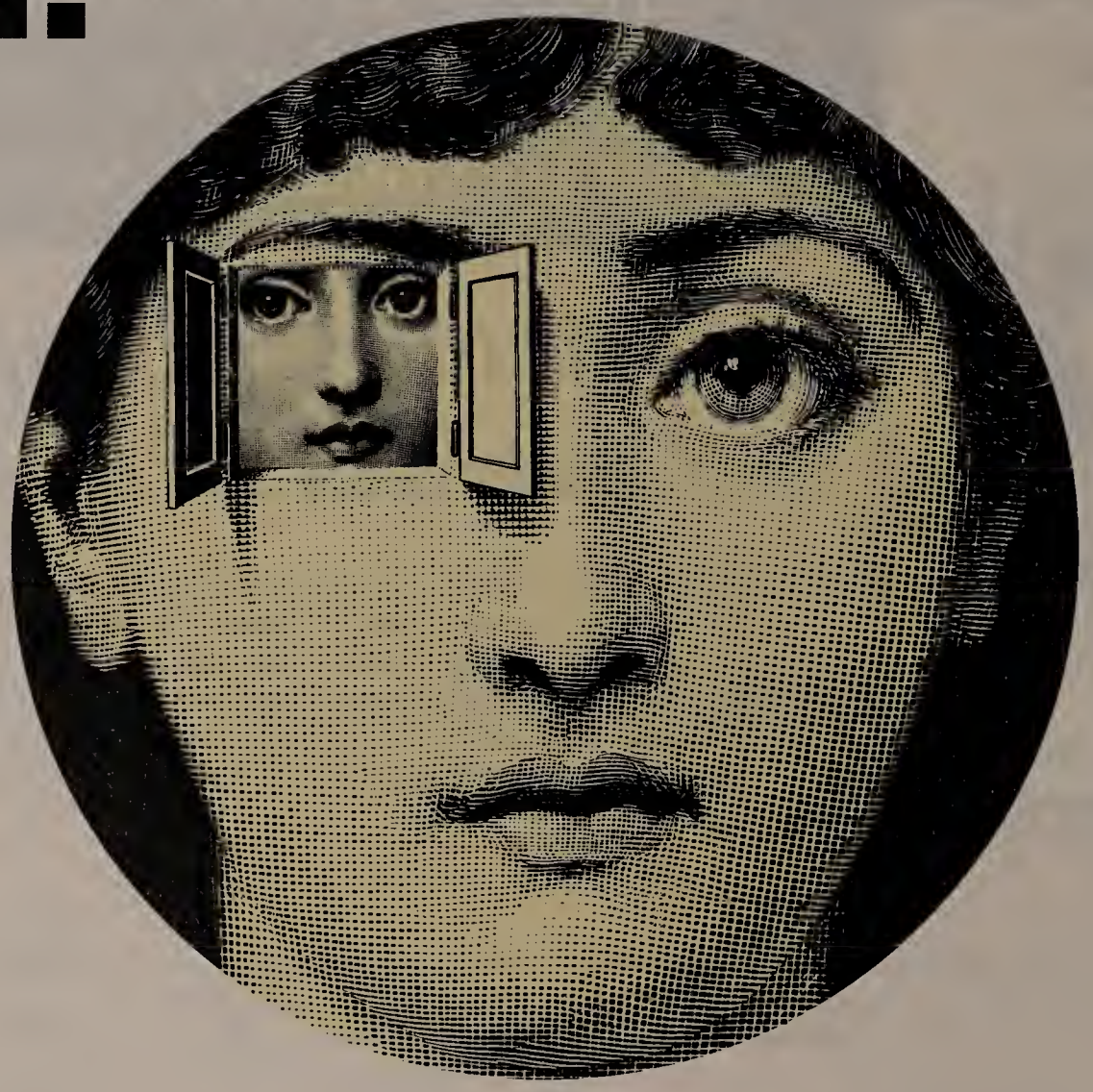

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Hong Kong firm banks on Visual Basic

By Jacqueline Mailloux
HONG KONG

The Bank of America in Hong Kong is betting that Microsoft's Visual Basic scripting language will provide a smooth transition for doing business on the Internet.

Microsoft Corp.'s Visual Basic Script, a subset of the firm's rapid application development language Visual Basic, will let developers link and automate objects in World Wide Web pages.

Those objects include OLE objects and applets created using the Java development language that Microsoft recently licensed from Sun Microsystems, Inc.

Frankie Liu, microsystems development manager at Bank of America, plans to use Visual Basic and Visual Basic Script to implement the bank's three-phase Internet strategy.

Step-by-step

The first phase, which Liu said will go online by the end of June, focuses mainly on promoting products and services.

It will include content such as service hours and the location of branches and automated teller machines.

The second phase of the project will push further by moving into areas such as financial transactions. Doing "real business" on the Internet, which would include bill payment and money transfers among other banking functions, will be part of the third phase of the bank's Internet strategy.

Application development

Until now, Liu said, his department hasn't done much work developing applications for the Internet. But he doesn't expect too many difficulties with that task; his team has already developed LAN applications.

"The Internet is another kind of LAN — it's a remote LAN," Liu said. So Internet application development is a natural progression, he said.

"When we leverage Visual Basic, we have the skills, controls and program routines that we can use, so we don't have to start from scratch," he said.

"I prefer to stick with a language we already know," Liu said. "The learning curve would be longer" if Java and Java Script were used instead, he said.

Although Liu, like many of his peers, hasn't actually seen Java at work, he noted that Java isn't mature either. He said the product is likely "overhyped."

"I'm looking at the long term. In the first six months, [Visual Basic Script] will probably not be as good [as Java Script]. Maybe in a year it will be comparable, and then we will start to see benefits," Liu said.

Some of the benefits Liu said he expects to see from Visual Basic Script will be a direct result of using Visual Basic. Liu said Visual Basic has many applications and controls that are available to developers, especially when the product is compared with other object-oriented languages.

When using Visual Basic, "you're really doing technology integration" and not a lot of heavy-duty coding, Liu said.

Microsoft officials said Visual Basic Script will be available for free off the Internet. Microsoft also will propose Visual Basic Script to the World Wide Web Consortium and the Internet Engineering Task Force as an open Internet scripting language standard.

Mailloux writes for *Computerworld Hong Kong*, from which this is excerpted.

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BY PHONE: 1-800-241-4600 in the USA or 1-508-820-4300
BY FAX: 1-508-872-6500 BY WEB: http://www.ow.com/ow/
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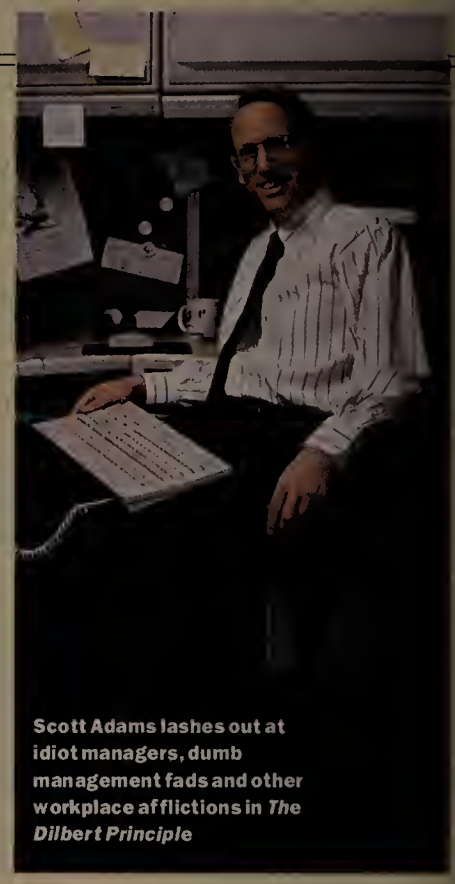
Distributed Applications For The Real World

Managing

BOOK EXCERPT

Dilbert explains it all



Scott Adams lashes out at idiot managers, dumb management fads and other workplace afflictions in *The Dilbert Principle*

There's reading for fun. There's reading for self-defense. *The Dilbert Principle* falls with a lighthearted clunk into both categories for information systems professionals and their managers. Everyone's favorite nerd covers all the bases in this tongue-in-cheek tome on bosses, meetings, management fads and other workplace afflictions. Whether you're a manager or the victim of one, you can dive right into chapters on "Humiliation," "Machiavellian Methods" or "How to Get Your Way." As a recently promoted manager, I naturally headed straight for "Swearing: The Key to Success for Women" in Chapter 9. (Expletive deleted!) Our Dilbert not only knows that managers are all idiots, he offers scientific proof, involving monkeys and Total Quality Management. I just knew that TQM would turn out to be good for something.

— Maryfran Johnson,
Executive Editor, Computerworld

THE DILBERT PRINCIPLE

The most ineffective workers are systematically moved to the place where they can do the least damage: management.

You may be wondering if you fit the description of a Dilbert Principle manager. Here's a little test:

1. Do you believe that anything you don't understand must be easy to do?

2. Do you feel the need to explain in great detail why "profit" is the difference between income and expense?

3. Do you think employees should schedule funerals only during holidays?

THIS DESKTOP VIDEO CONFERENCE THING IS GREAT!
EVEN THOUGH YOU'RE TELECOMMUTING, YOU STILL MAINTAIN A LEVEL OF PROFESSIONALISM.
LET'S SHARE A DOCUMENT NEXT TIME.

IN JAPAN, EMPLOYEES OCCASIONALLY WORK THEMSELVES TO DEATH IT'S CALLED KAROSHI.
I DON'T WANT THAT TO HAPPEN TO ANY-BODY IN MY DEPART-MENT
THE TRICK IS TO TAKE A BREAK AS SOON AS YOU SEE A BRIGHT LIGHT AND HEAR DEAD RELATIVES BECKON.

STUPID MANAGER TRICKS

Great Lies of Management

For your convenience, I have compiled and numbered the most popular management lies of all time.... This will save you a lot of energy that can then be channeled into whining about your co-workers.

1. "Employees are our most valuable asset."
2. "I have an open-door policy."
3. "You could earn more money under the new plan."
4. "We're reorganizing to better serve our customers."
5. "The future is bright."
6. "We reward risk-takers."
7. "Performance will be rewarded."
8. "We don't shoot the messenger."
9. "Training is a high priority."
10. "I haven't heard any rumors."
11. "We'll review your performance in six months."
12. "Our people are the best."
13. "Your input is important to us."

Perpetual Motion

Change is caused by consultants. Then you need consultants to tell you how to handle the change. When you're done changing, you need consultants to tell you that the environment has changed and you'd better change again.

It's a neat little perpetual motion machine. That's the problem when you pay consultants by the hour. In some small towns, there is a rule that consultants can't serve as volunteer firemen. The fear is they'd drive around setting fire to the town.

Reorganizations

Managers are like cats in a litter box. They instinctively shuffle things around to conceal what they've done. In the business world, this process is called "reorganizing." A normal manager will reorganize often, as long as he's fed.

You can tell that you've reorganized too often — and are therefore doomed — if you hear your co-workers asking any of these questions in the hallways:

"If I had to live in a dumpster, how bad would that be?"

"Where do street people shower?"

"Is tuberculosis fatal?"

Undervaluing Employee Contributions

Employees like to feel that their contributions are being valued. That's why managers try to avoid that sort of thing. With value comes self-esteem, and with self-esteem comes unreasonable requests for money.

From The Dilbert Principle *by Scott Adams. Copyright (c) 1996 by United Features Syndicate, Inc. Reprinted by arrangement with HarperBusiness, a division of HarperCollins Publishers.*

GETTING EVEN

Theft of Office Supplies

Office supplies are an important part of your total compensation package. If God didn't want people to steal office supplies, he wouldn't have given us briefcases, purses and pockets. In fact, no major religion specifically bans the pilfering of office supplies.

The only downside is the risk of getting caught, disgraced and imprisoned. But if you compare that to your current work situation, I think you'll agree that it's not such a big deal.

Use Computers to Look Busy

Any time you use a computer, it looks like "work" to the casual observer. You can send and receive personal E-mail, download pornography from the Internet, calculate your finances and generally have a blast without doing anything remotely related to work. These aren't exactly the societal benefits that everybody expected from the computer revolution, but they're not bad either.

When you get caught by your boss — and you will get caught — your best defense is to claim you're teaching yourself to use the new software, thus saving valuable training dollars. You're not a loafer; you're a self-starter. Offer to show your boss what you learned. That will make your boss scurry away like a frightened salamander.

Surround Yourself With Losers

Make sure you work in a group with losers. Losers are the ones who will get low raises, thus leaving ample budget funds for you. The worst mistake you could make is to work in a group with highly qualified people. That's a no-win situation for all of you.

If you don't have any losers in your group, help your boss recruit some, preferably in areas that don't affect your life. You want the losers to be within the same general budget area but not close enough to annoy you on a daily basis.

Complain Constantly About Your Workload

Take every opportunity to complain about the unreasonable demands that are being placed on you. Reinforce your message during every interaction with a co-worker or manager. Here are some time-tested phrases that you should insert into every conversation:

"I'm up to my ass in alligators."

"I've been putting out fires all day."

"I had fifteen hundred voice-mail messages today. Typical."

"It looks like I'll be here on the weekend again."

Over time, these messages will work themselves into the subconscious of everybody around you, and they will come to think of you as a hard worker without ever seeing a scrap of physical evidence to support the theory.

Dumb but true

The Dilbert Principle *includes actual electronic mail from Dilbert fans. Here's a sampling.*

From: (name withheld)
To: scottadams@aol.com

Scott,

Now that we've re-engineered, we have fewer managers than we have windows! Big problem, but we have a solution. We've erected five-foot-high partition walls in front of the windows so that non-managers can sit there without offending the pecking order.

From: (name withheld)
To: scottadams@aol.com

Scott,

The MIS manager, who doesn't know anything about computers, buys computers one at a time so he can purchase them on his personal credit card. He then files for reimbursement on his expense account. Why does he do this? To acquire frequent flyer miles given by his credit-card company. Therefore, it takes an entire year to buy 20 computers.

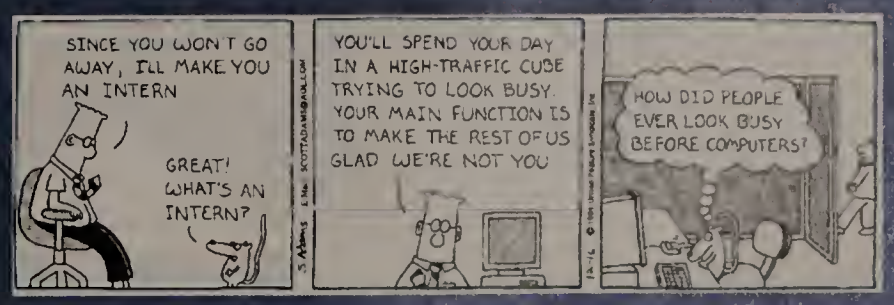
From: (name withheld)
To: scottadams@aol.com

Scott,

I spent Friday morning at [my company's] quarterly all-hands meeting. I was willing to sacrifice a morning of my life for a T-shirt, in this case a very nice one.

Anyway, they gave out a "Process" award. The award for best new process was awarded to the group who made up the process for awarding awards.

MY LAPTOP COMPUTER IS LOCKED UP. CAN YOU HELP?
REMEMBER YOU HAVE TO HOLD IT UPSIDE DOWN AND SHAKE IT TO REBOOT
OH, THAT'S RIGHT.
I WONDER IF HE'LL EVER REALIZE WE GAVE HIM AN "ETCH-A-SKETCH"


SINCE YOU WON'T GO AWAY, I'LL MAKE YOU AN INTERN
GREAT! WHAT'S AN INTERN?
YOU'LL SPEND YOUR DAY IN A HIGH-TRAFFIC CUBE TRYING TO LOOK BUSY. YOUR MAIN FUNCTION IS TO MAKE THE REST OF US GLAD WE'RE NOT YOU
HOW DID PEOPLE EVER LOOK BUSY BEFORE COMPUTERS?

*Estimated selling price for Bravo LC 5100 model 6/35W, monitor not included. Actual prices may vary. Contact your reseller for details.

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AST COMPUTER

Where things are HAPPENING

JULY - SEPTEMBER 1996

HOT HAPPENINGS

Our picks for the IS events you gotta get to

Conference planners for IS events haven't caught on to summer yet. Chicago, New York, New Orleans, Scottsdale, Ariz. . . . what could they be thinking? If you don't mind the heat — at least outdoors — you'll find many worthwhile air-conditioned events in July and August. Or wait until September, when the fall conference season revs up with Networld/Interop, SIM Interchange and the Computer Training Expo.

The 1996 Informix Worldwide User Conference & Exhibition

JULY 9-12, CHICAGO;
NAVY PIER CONVENTION CENTER

Good for: Developers, database administrators and managers.

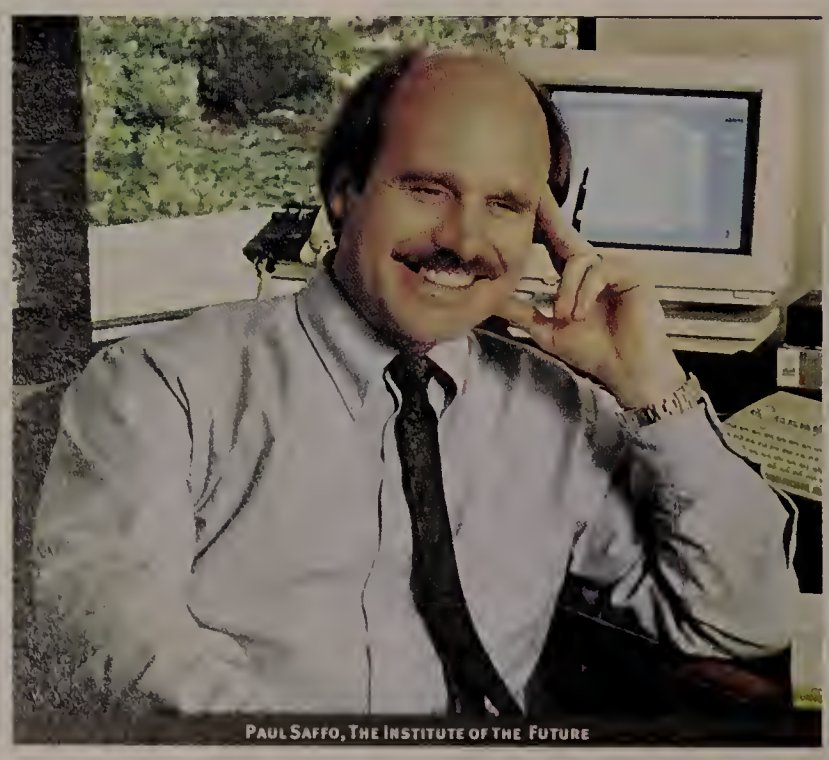
Speakers: Paul Saffo, who heads The Institute of the Future, a planning and forecasting group, will discuss the future of the computer industry. Industry analysts will address the relationship between relational database management systems (RDBMS) and the Internet. At least three Informix technology chiefs will discuss the company's product plans.

Fee: $895 through June 28; $995 thereafter.

Contact: Informix, Menlo Park, Calif. (800) 784-6580 or (617) 736-1779. E-mail: iwuc@informix.com. Web site: http://www.informix.com.

The conference's 100-plus educational sessions will teach you a lot about Informix, which many say is the most Internet-savvy RDBMS vendor in the market. The sessions by Saffo and Informix executives likely will be especially worthwhile. You'll also see exhibits by 100 Informix partners.

But just as important, you and your 4,000 colleagues will have fun at this user-group event. Informix knows how to party. There'll be live entertainment every morning and most evenings.



PAUL SAFFO, THE INSTITUTE OF THE FUTURE

HP World '96

AUG. 4-9, ANAHEIM, CALIF.; ANAHEIM CONVENTION CENTER

Good for: Developers, IS managers and users.

Speakers: Lewis Platt, Hewlett-Packard Co. chairman and CEO; Scott Adams, creator of the "Dilbert" comic strip; Joel Birnbaum, HP's senior vice president of research and development; James C. Wetherbe, professor and director of the Management Information Systems Research Center at the University of Minnesota.

Fee: $1,490 for conference and expo passport.

Contact: Interex, Sunnyvale, Calif. (800) 990-3976 or (408) 747-0227. Fax: (408) 747-0947. Web site: http://www.hpworld.org.

This conference, formerly known as Interex, is the annual meeting of the minds between users and HP. It provides opportunities for both technology training and shopping. HP staffers and IS managers lead sessions on systems management, client/server and other technologies. The product expo covers everything from personal digital assistants to enterprise servers.

The sessions are invaluable to users concerned with the future of the proprietary HP 3000 platform. Don't miss the HP Management Roundtable on Thursday at 1 p.m., where users can lob questions and throw complaints at top HP managers. Platt is slated to present his firm's strategy for the Internet age.

DCI's Data Warehouse World

AUG. 13-15, NEW YORK; NEW YORK HILTON & TOWERS

Good for: Upper and middle management, developers and users.

Speakers: David Menninger, director of Express technology at Oracle Corp.; Inderpal Bhandari, IBM researcher; Robert Salmi, assistant coach, New York Knicks.

Fee: $1,095 for basic conference; $300 more for one additional daylong seminar before or after conference.

Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880 for information and registration; for express registration, (800) 334-3976 or fax (508) 470-0526. E-mail: ConfReg@dciexpo.com. Web site: http://www.dciexpo.com./datawhse/

Data Warehouse World, devoted to one of the hottest topics in computing, was designed to acquaint users with every aspect of creating and managing a warehouse, which can be a dauntingly complex affair. The cohosting by Meta Group, Inc., a firm of industry analysts, tends to offset vendors' extravagant promises. The show is expected to draw 3,000 people in each of its two locales.

For levity, IBM researchers and basketball notables will demonstrate Advanced Scout, a data mining application that lets NBA coaches detect trends in a game while it's under way and formulate responsive strategies.

HOT HAPPENINGS

1996 Computer Training & Support Conference & Expo

SEPT. 8-11, NASHVILLE; OPRYLAND HOTEL

Good for: Training managers from business and IS; technical support staffers, classroom trainers and systems documentation writers.

Speakers: William Rosenthal of Logical Operations, on the future of instructor-led training; Kenneth Cook of Computer Utilization, Inc., on the nuts and bolts of running a training center; Mary Gillet of the London (Ontario) Health Sciences Center, on training users to use the Internet.

Fee: $995.

Contact: SoftBank Institute, Medford, Mass. (800) 34-TRAIN; Web site: http://www.sbexpos.com.

This conference offers something for everybody, from business managers responsible for training budgets, to training developers looking to test the latest multimedia development tools and programs. Many sessions focus on practical matters such as how to keep current with all the technologies you're supposed to support. The conference also includes more than 30 case-study sessions, where presenters detail what they did right and what they would do differently.

The Opryland Hotel is a hoot: It's a country and western megahotel, like Vegas only sleaze- and slot-less. It also houses Nashville's top country radio station. Look for the Opryland travel desk at the Nashville airport for fast and easy transportation to the hotel.

Internet Commerce Expo

SEPT. 9-12, ANAHEIM, CALIF.; ANAHEIM CONVENTION CENTER

Good for: IS managers, marketing and salespeople and other business executives in companies doing business on the Internet.

Speakers: James Barksdale, CEO of Netscape Communications Corp., Robert J. Herbold, chief operating officer and executive vice president of Microsoft Corp.; ex-Lotus chairman Jim Manzi, now CEO of Industry Net, a company devoted to helping companies set up business-to-business communications online.

Fee: $50 to get on the exhibit floor; $950 to see and hear everything.

Contact: ICE, Framingham, Mass. (508) 820-8612 to register, (800) 667-4ICE for information. Web site: http://www.idg.com/ice.

You can't spit without hitting an Internet expo these days, but this show's focus on the Internet and business, from technical and management angles, makes it particularly promising. The lineup of keynoters also helps to lift it above the pack. The developers' track will include discussion about developing intranets, building commercial Web applications and using Java. The general track will include discussion of E-mail, electronic payments, security, multimedia and real-world case studies. And an executive conference will focus on business issues that relate to electronic commerce. Should things get boring anyway, you can always run to nearby Disneyland and go on the "It's a Small World" ride.

SKYLINE OF DOWNTOWN ATLANTA

Networld/Interop Atlanta '96

SEPT. 16-20, ATLANTA; GEORGIA WORLD CONGRESS CENTER

Good for: MIS managers, network administrators and software developers.

Speakers: Not confirmed.

Fee: $50 to attend the exhibition. Conference cost ranges from $400 to $1,999, depending on the number of conference days, tutorials and workshops selected.

Contact: Softbank Expos, Foster City, Calif. (800) 4-SBEXPO or (415) 578-6900 for general info, (800) 488-2883 for registration. Web site: http://www.interop.com.

NetWorld/Interop has become *the* premier networking show, with an ever-increasing emphasis on the Internet and Internet access. Expect the top industry movers and shakers to be there, along with about 50,000 attendees. Microsoft Chairman Bill Gates, Novell CEO Bob Frankenberg and MCI Communications Corp. President John Gerdelman were keynote speakers at the spring show in Las Vegas last month.

Attendees will find a heavy dose of new switching internetworking products, along with leading-edge technologies such as Asynchronous Transfer Mode (ATM) and ATM alternatives. A new show-within-a-show called Interop DotCom focuses on Internet and Intranet business services and applications.

SIM Interchange '96,

SEPT. 29 - OCT. 2, SAN FRANCISCO; SHERATON PALACE HOTEL

Good for: Senior IS executives, up-and-coming younger IS managers

Speakers: Chief information officer speakers include Amoco Corp.'s Carl Williams and Kraft Foods, Inc.'s Jim Kinney. Consultants include CSC Consulting Vice Presidents Skip Savoia and Vaughan Merlyn.

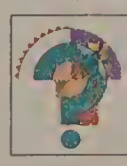
Fee: If you register by May 30, $1,395 for nonmembers, $1,185 for Society for Information Management (SIM) individual members and $840 for SIM Enterprise, Enterprise Plus and Academic members. Fees after May 30 to be determined.

Contact: SIM headquarters, Chicago (312) 644-6610. Web site: http://www.simnet.org.

With four days of schmooze time, SIM's big event of the year remains one of the best ways for IS executives to meet peers and for younger IS managers to draw inspiration from the top people in the profession.

SIM Interchange is a fine place to pick other people's brains about people issues and hot IS trends. The prominent ex-CIOs strolling the halls (Irwin Sitkin and Sid Diamond are some of the regulars) are always happy to chew the fat, particularly if they're consultants.

The actual speeches, unfortunately, have always been hit-and-miss. This year's event includes 25 breakout sessions and professional development workshops.



frogs

Computerworld Editorial Calendar

July - October, 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
July 1	June 14	June 21	**Closer Look:** Trends in desktop hardware and servers	
July 8	June 21	June 28	**Buyer's Guide to High-Speed Modems:** With users turning to the World Wide Web and demanding remote access to graphically-intensive applications, modems are playing an increasingly important role in corporate life. This Buyer's Guide will explore state of the art modem technology, look at where new modems work or need work, and help IS managers decide which class of modem is right for their applications.	**Informix User Group** Chicago 7/9 - 7/12
July 15	June 28	July 5	**Closer Look:** Intranets Lessons learned **IS Leadership Series**	
July 22	July 5	July 12	**Managing:** The IS executive as entrepreneur **Intranet Series**	
July 29	July 12	July 19	**Buyer's Guide to Sales Automation Software:** When IS moves to give sales representatives new tools to make sales presentations and log orders, a broad variety of technologies converge — notebooks, remote access software and databases. This Buyer's Guide will look at how IS managers address the special needs of this crucial application, and examine some of the commercially-available software designed to meet their needs. **Special Report:** Data Warehousing Second in a two-part series focusing on using and managing data warehouses. This issue will profile best-in-class examples of data warehousing and look at applications in data mining.	
Aug.	June 26		**Computerworld Client/Server Journal** Extended Enterprise: Managing dispersed groups of programmers Product Focus: Application development (GUI builders, compilers, componentware, tool suites, HTML page builders) Careers: Skill-ware — does it work?	**Harvey Study** Object World, CA World, Networks Expo, Mobile World, Networld + Interop, SIM Fall Conference
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications. **Special Report:** The Future of Computing	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series**	**Object World** Starch Study San Jose 8/20 - 8/22
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Intranet Series**	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Starch Study Dallas, 9/10 - 9/12 **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs. **IS Leadership Series**	**Networld + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	**Managing:** The best new books for IS managers **Special Report:** Top Web sites for IS managers **Intranet Series**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct.	Aug. 21		**Computerworld Client/Server Journal** Extended Enterprise: Road warrior war stories Product Focus: Networking (routers, network management suites, diagnostic tools, intranet components) Careers: The end of the specialist	Unix Expo Software Developers' Conf.
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	

* Includes ads within special editorial features and premium positions

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Computerworld Editorial Calendar

October - December, 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Oct. 21	Oct. 4	Oct. 11	**Buyer's Guide to Notebook PCs:** They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. This Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies. **IS Leadership Series**	
Oct. 28	Oct. 11	Oct. 18	**Closer Look:** Java Development **Intranet Series** **Annual Computerworld Campus Edition** (actual mail date October 31)	**Software Developers' Conf.** Washington, DC 10/29 -10/31
Nov.	Sept. 25		**Computerworld Client/Server Journal** Extended Enterprise: Streamlining the virtual corporation Product Focus: Databases (modeling, management, query, analysis and reporting tools) Careers: New skill sets for on-line application development	Comdex Fall Database/Client Server World DB Expo
Nov. 4	Oct. 18	Oct. 25	**Buyer's Guide to Network Operating Systems:** Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.	
Nov. 11	Oct. 25	Nov. 1	**Annual Computerworld Skills Survey:** Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.	
Nov. 18	Nov. 1	Nov. 8	**Buyer's Guide to Multimedia PCs:** The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large. **IS Leadership Series**	**Comdex Fall** Las Vegas 11/18 - 11/22
Nov. 25	Nov. 8	Nov. 15	**Closer Look:** Outsourcing/systems integration **Intranet Series**	Starch Study
Dec. 2	Nov. 15	Nov. 22	**Buyer's Guide to Decision Support Tools:** CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.	**DB Expo** New York 12/2 - 12/6
Dec. 9	Nov. 22	Nov. ** 27	**Closer Look:** Software license management **IS Leadership Series**	**Database/Client Server World** Chicago 12/10 - 12/12
Dec. 16	Nov. 29	Dec. 6	**Buyer's Guide to Futuristic Technologies:** Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of the advanced technology products that actually may prove useful for IS managers and their staffs. They aren't just for fun and games anymore. **Intranet Series**	

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Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Aug. 12	May 31	**White Paper:** **Supply Chain Management** (Part 3 of 4-part Manufacturing Directions Series)	
Aug. 19	June 21	**White Paper:** **RAID** (Part 2 of 4-part Enterprise Storage Management Series)	**Object World**
Sept. 2	June 21	**White Paper:** **Financial & Human Resource Applications** (Part 3 of 4-part Enterprise Software Directions Series)	
Oct. 14	Aug. 16	**White Paper:** **Hierarchical Storage Management** (Part 3 of 4-part Enterprise Storage Directions Series)	
Dec. 2	Sept. 27	**White Paper:** **Network & Systems Management: Adopt for Change or Get Out of the Way** (Part 4 of 4-part Manufacturing Directions Series)	**DB Expo**
Dec. 9	Sept. 20	**White Paper:** **Systems & Network Management** (Part 4 of 4-part Enterprise Software Directions Series)	**Database/Client Server World**
Dec. 16	Oct. 18	**White Paper:** **Client/Server Backup** (Part 4 of 4-part Enterprise Storage Directions Series)	

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Buyer's Guide

LAUREN LING

Printers put on a fresh face

New capabilities spark interest in color printing and consolidation of print tasks / BY DANIEL LYONS

THE NEWARK HOUSING AUTHORITY (NHA) last year tossed out all of its antiquated personal printers and replaced them with 80 high-powered Xerox Corp. 4520 network printers running on a new 400-user LAN. "The capital investment is much lower this way," says Johnson Abraham, assistant executive director of the NHA in Newark, N.J. "Also, maintenance is much easier when you have only 80 printers rather than 400 printers. And we save floor space."

The NHA, which shifted its printer strategy during an overhaul of the agency's network, is among the many organizations that are embracing the idea of sharing powerful high-end laser printers on networks rather than giving each employee a dedicated printer.

One reason for the interest in networking is the lower hardware cost. Users and analysts say that even though network printers cost more on a per-unit basis than desktop printers, it costs less to share a handful of them than to give everyone a personal printer. Users also report that maintenance and management are easier when printing is consolidated at the network level. And, so-called network printers now boast sophisticated paper-handling features that make them compelling to customers who can't justify those features on hundreds of standalone printers.

"The rise in the number of printers that are being networked is continuing. Every year in our survey, the num-

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PC World's Top 10 Picks

Six times per year, the PC World *Test Center rates workgroup printers based on output quality, features, price, support policies, performance and consumables. This list appears in the May issue of* PC World.

Monochrome

1. Lexmark Optra R+
Comments: Entry-level Optra is faster than predecessors
2. Texas Instruments, Inc. MicroLaser PowerPro/12
Comments: Fast, compact Adobe Systems, Inc. PostScript printer debuts
3. Okidata Corp. OL1200
Comments: Inexpensive, comes with PostScript
4. Lexmark Optra Lx+
Comments: High-end Optra has more RAM and 500-sheet input
5. Brother International Corp. HL-960
Comments: Needs external networking device, lacks PostScript
6. HP LaserJet 4M Plus
Comments: Network-ready, 600 dot/in, 12 page/min.
7. HP LaserJet 4MV
Comments: Network-ready, 16 page/min., prints full-bleed 11 by 17

Color

1. HP DeskJet 1600CM
Comments: Low-cost, good plain-paper printing. A winner.
2. Apple Computer, Inc. Color LaserWriter 12/600 PS
Comments: Very slow but superior output, PostScript only
3. Lexmark Optra C
Comments: Slowest color printer but excellent output

Fresh face

CONTINUED FROM PAGE 89

ber of people who use a shared network printer gets larger," says Paula Bursley, an analyst at Dataquest, a market research firm in San Jose, Calif.

And network laser printer prices are falling rapidly. Market leaders such as Hewlett-Packard Co. (http://www.hp.com) in Palo Alto, Calif., and Lexmark International, Inc. (http://www.lexmark.com) in Lexington, Ky., have provided machines with vastly increased performance at the same price as the machines they replaced.

"In the same price frame, HP has moved from 17 page/min. to 24 page/min. on their network lasers. And Lexmark has moved from 12 page/min. to 16 page/min.," says John Goetz, director of imaging technology products at Giga Information Group in Santa Clara, Calif.

The new generation of network printers also boasts sophisticated paper-handling features such as duplexing and stacking and, in some cases, the ability to route print jobs to private mailboxes. That new generation includes the HP LaserJet 5Si MX and the Lexmark Optra Lxi+.

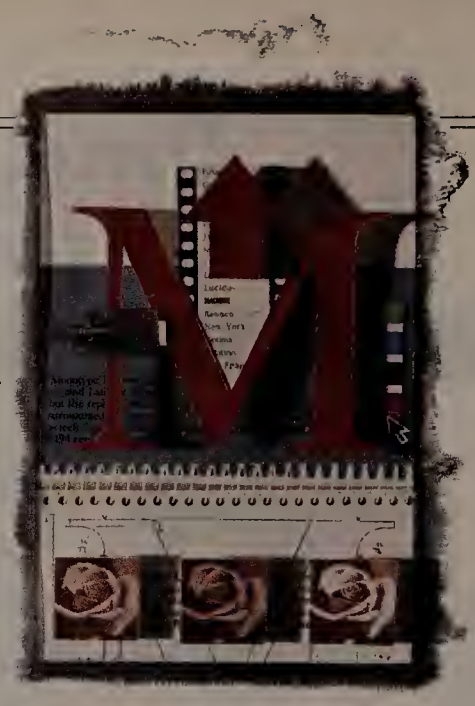
Networked laser printers are becoming so sophisticated, in fact, that they pose a threat to copy machines. Manufacturers such as Xerox (http://www.xerox.com) and HP now promote multifunction machines — once thought of as only for the home office or small business market — that can scan, copy, print and fax documents on a corporate network.

Make way for "mopies"

Xerox's Document WorkCenter 250 does all those things and costs $699. HP's CopyJet, a combination color ink-jet printer and color photocopier, costs $2,949. The trend has spawned a new word — mopies, which rhymes with copies and comes from an acronym for multiple original prints. HP promotes its ScanJet 4Si network scanner by saying that customers who combine the scanner with a high-powered network printer can do away with copy machines altogether.

Analysts say they don't expect copy machines to go away any time soon. But they say printer companies eventually will begin to encroach on the copier market.

For most users the "converged" world is still a few years away. "That's the future," Abraham says. "We're talking to Xerox about scanning tools. But I'd say we're still 12 to 18 months away from doing anything like that."



A more urgent concern for most users is the challenge of managing printers on a network. Most major vendors provide management software. These programs let network administrators troubleshoot problems on remote printers. They also let users get information about the location and capabilities of remote printers to which they might like to send a print job.

But while each vendor has its own software, no one has developed a management program to handle an environment that includes printers from multiple vendors across multiple operating environments.

Printer vendors are trying to establish standards. And Novell, Inc. is working with several vendors to promote a standard called Novell Distributed Print Services, or NDPS, which would cover a variety of printers but only on Novell NetWare environments.

"What users want is a utility that will manage all their printers from a variety of manufacturers across a wide spectrum of operating environments, including TCP/IP and NetWare," Goetz says. "They want to see all their printers in one utility. Today, there is nothing that can do that. The industry is moving in the right direction, but there's a lot of room for improvement."

New resolutions

One area in which all vendors are making rapid improvement is resolution. The industry standard for office documents is 600 by 600 dot/in. Some people call these 600 dot/in. printers because both axes are the same. But that's not always the case. Recently, Lexmark upped the ante, introducing 1,200 by 1,200 dot/in. printers that provide better resolution — although it's not always discernible to the naked eye. For now, HP remains at 600 dot/in.; the company insists this is what customers want.

"For now, most customers don't use 1,200 dot/in. But we believe that within 12 to 18 months, all the vendors will be offering 1,200 dot/in. capability," Goetz says. "The trend is always toward better, faster and cheaper. And the industry is moving very aggressively." ■

Lyons is a freelance writer in Ann Arbor, Mich.

Color ink-jets in the pink

Probably the most compelling trend in the desktop printer market has been the remarkable success of color ink-jet printers. "Color ink-jet is the fastest growing segment of the printer market," says Paula Bursley, an analyst at Dataquest.

This boom is being driven mostly by the small office/home office — or SOHO — market, analysts say. While corporate customers are moving toward shared network printers, smaller customers are drawn by the ability to get low-cost color printing from color ink-jet machines.

Shipments of color ink-jet printers in North America will grow 63%, from 7 million units last year to 11.4 million units in 1999, according to Dataquest. In the same period, overall printer shipments will grow 26%, and laser printer shipments will grow 33%, Dataquest analysts project. Sales of low-end laser printers have started to decline, said Alyson Frasco, an analyst at International Data Corp., a market research firm in Framingham, Mass.

"Sales of low-end lasers were down 1% in 1995 from 1994. They're declining. But actually, they're not declining as rapidly as we thought they would," Frasco says.

Color ink-jet printers cost about the same as low-end laser printers, offer nearly as good resolution, and users get color.

Analysts divide the market for desktop printers into low and high subdivisions based on printer speed. High-end machines boast speeds of 6 page/min. or greater.

Analysts give good grades *to the HP 800 printers, which include the DeskJet 820Cse and (pictured) DeskJet 850C*

Analysts are reluctant to make specific product recommendations. But there are some machines they point to as representing good value in a particular segment.

Some examples from the low end include Hewlett-Packard's LaserJet 5L, a 4 page/min., 600 dot/in. monochrome printer that costs $479. Canon USA, Inc. (http://www.canon.com) in Lake Success, N.Y., is another strong player in the low-end market with a line of ink-jet printers that includes the BJC-4100, a 1 page/min., 720 by 360 dot/in. printer that costs $399. Epson America (http://www.epson.com) sells its Stylus Color II, a 720 dot/in. color ink-jet, for $450.

At the high end of the market, HP is the strongest player, with a leading share. Analysts give high marks to HP's 800 series of DeskJet color ink-jet printers such as the 820Cse, a Windows-oriented printer that offers 6.5 page/ min. monochrome and 4 page/min. color performance.

Another good choice, according to analysts, is Lexmark International's Color Jetprinter 2070, which prints at 7 page/min. for black-and-white images and 1 page/min. for color. It costs $399.

Among high-end personal monochrome lasers, Xerox's DocuPrint 4508 is cited by analysts as a strong contender. It offers 8 page/min. speed, 600 dot/in. resolution and costs $799. Analysts also noted the HP LaserJet 5P with 6 page/min. speed, 600 dot/in. resolution and the ability to do wireless printing for $899. — *Daniel Lyons*

Technology Review

Here's a quick take on the status and future of the various printer categories, according to John Goetz, director of image technology products at Giga Information Group in Santa Clara, Calif.

● Color ink-jet printers

These printers have a mechanism that sprays one or more colors of ink onto paper and produces high-quality printing.

Market analysis: This is the hot area in the desktop printer arena. U.S. shipments went from 5 million units in 1994 to more than 8 million last year. These printers are going down in price but up in speed and quality.

● Desktop laser printers

These printers use the same electrophotographic method as copy machines. A laser beam "paints" dots of light onto a photographic drum or belt. The toner is applied to a drum or belt and transferred onto the paper.

Market analysis: The market was fairly mature and showed modest growth between 1994 and 1995. Long term, the desktop laser market will continue to feel competitive pressure from ink-jet printers, but for now, it's holding its own.

● Desktop color laser printers

It's similar in concept to a standard office laser printer except color toner is used.

Market analysis: It had more than 200% growth between 1994 and 1995 but still represents fewer than 30,000 units.

● Network laser printers

Network laser printers are defined by page output. They can range from 12 page/min. up to 40 page/min.

Market analysis: "HP, Lexmark and a few other companies are really moving the bar in price/performance. We've seen the speed of these kinds of products move up." Some of the most popular printer lines are now in the 16 page/min. to 24 page/min. range.

● Thermal wax transfer

A printing process that transfers a wax-like ink onto paper.

Market analysis: No matter how you cut it, there was some decline in this market because ink-jet technologies continue to prove to be a more cost-effective solution.

● Phase change

A relatively new category of technology in which a parafin wax base is melted and then sprayed onto a page. Only three vendors offer products so far.

Market analysis: Phase change is taking the place of many units that would have otherwise been wax transfer. One advantage of this technology is that it doesn't require the special paper needed in thermal transfer products.

● Dye sublimation

It's similar to thermal wax transfer except that dyes are used instead of ink. Dye sublimation is noted for its ability to create photographic-quality color through its continuous tone capability.

Market analysis: "Not a lot of movement in this category. As thermal transfer began to mature and decline, some people began to come out with combination products that could do wax transfer and dye sublimation. But we don't have a sense that those have had any tremendous market impact. Dye sublimation will be a technology that will remain important but not growing. The biggest problem there is cost of operation."

Some of the definitions are from *The Computer Glossary*, Seventh Edition, by Alan Freeman, 1995.

Network printers to embrace color lasers

Color laser printers have been slow to gain acceptance, but analysts say they're the way of the future in the network printer market. In the past, high prices have held back sales, but prices are falling rapidly. And analysts say users will be eager for color once it becomes affordable.

Dataquest, a market research firm in San Jose, Calif., projects unit shipments of color laser printers will grow from 28,600 last year to 138,200 in 1999 — a gain of 383%. Driving that growth will be price cuts, which have already begun.

The price of the average color laser printer has fallen from $9,000 to $6,000 in the past year, according to John Goetz, director of imaging technology products at Giga Information Group in Santa Clara, Calif., a market research firm.

Xerox recently added *new color imaging capabilities through its XPrint Plus family of networked laser printers*

Network Printers

But even at today's prices, color laser printers remain expensive enough that customers have to do some serious thinking before purchasing one, says Joel Brown, network administrator at Mustang Engineering, Inc. in Houston. His company recently purchased a Xerox Corp. 4915 color laser printer for almost $5,000, Brown says.

"If it had been a $2,000 machine, the decision would have been quicker," Brown says. "But when you're looking at a $5,000 machine, you have to ask yourself, 'Do we really, really need this?' " Officials at Brown's company decided they did. The Xerox 4915 is much faster and produces much better output than the color ink-jet printer it replaced, Brown says.

Among color laser printers, Xerox's 4915 is a top contender, according to several analysts. It boasts speeds of 12 page/min. for monochrome, 3 page/min. for color and a market-leading list price. The 4915 was one of three Xerox printers upgraded last month with new color image enhancement technology, Xerox Intelligent Color 2.0. Analysts also cited as a prime contender Lexmark International's Optra C. It costs $6,849 for a speed of 12 page/min. for monochrome and 3 page/min. for color. They also cited Hewlett-Packard's Color LaserJet 5. It is a 12 page/min. monochrome and 2 page/min. color printer and costs $7,295.

To many customers, those prices make high-end network monochrome printers look like a bargain.

Analysts say the hottest product in the monochrome segment is HP's LaserJet 5Si MX, a 24 page/min. laser printer that costs $4,899. Lexmark's new Optra N also boasts a 24 page/min. speed and costs $4,199 in a network-ready configuration. The Lexmark Lxi+ has 16 page/min. speed and costs $3,249. Bargain hunters, however, will go with low-end workgroup printers such as the Lexmark Optra E, which boasts a 6 page/min. speed and costs $699. Other good choices here have included the Xerox DocuPrint 4517, a 17 page/min. printer, which costs $2,070 and the HP LaserJet 4M Plus, which boasts a 12 page/min. speed and costs $2,479. The latter printer was replaced in late April by HP LaserJet 5 models that feature new networking capabilities and the HP Printer Control Language 6 printer language. — *Daniel Lyons*

Analyst John Goetz

High-end Printers

The high-end printer market has been struggling ever since mainframe sales stagnated and $500 desktop printers started printing in color.

But rather than try to win back printing volumes lost to low-end printers, vendors such as IBM, Eastman Kodak Co. and Xerox are enhancing their 70-plus page/min. printers to compete for work normally sent to commercial presses.

On-demand printing is the biggest advantage printers have over presses, according to Angele Boyd, a director at International Data Corp. in Framingham, Mass. Presses still reign supreme in print quality, but the ability to print what you want, when you want is a freedom presses can't match.

The most notable advancement to look for is a new production printing architecture called Supra from Adobe Systems, Inc. Supra, which integrates the Adobe PostScript language and Portable Document Format standards, allows high-end printers to print higher-quality, PostScript documents much faster, according to Charles LeCompte, editor and publisher of the "Hard Copy Observer" in Newton, Mass.

Adobe partnered with 26 printer makers to develop the multiplatform Supra, and printers supporting the architecture are expected to show up by year's end

But as alluring as the new architecture may be, Boyd advises buyers to examine their own document strategy

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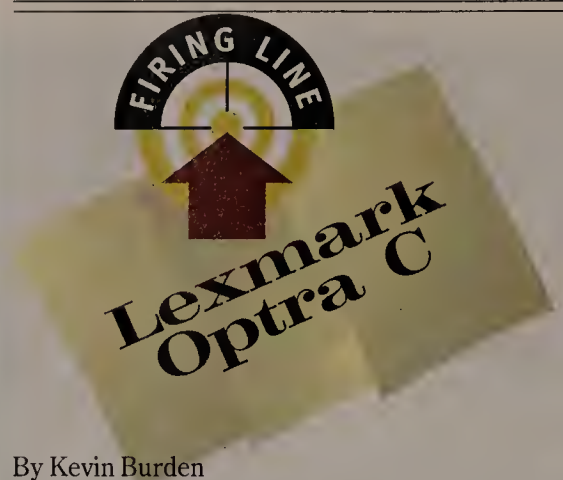
Printer buyers need to look at the total cost of ownership (TCO). When you add in factors such as service, ink and paper, the cost of owning a device such as a networked laser printer may be seven times the street price.

Xerox Corp. last month offered an example of TCO when it cited low TCO figures for its new XPrint 4915 Plus. Xerox estimated the 4915 Plus will cost about $908 per month, or $32,680 for a three-year lease on a printer that has a street price of between $4,500 and $4,900.

Xerox estimated the lease cost at $158 per month and on-site service at $47 per month. But supplies were projected at $703 per month. Xerox cited a comparison by Lyra Research, Inc. in Newton, Mass., publisher of the "Hard Copy Observer" newsletter. Lyra came up with per-copy consumable costs for various printers. In the Xerox case, supplies cost 3.6 cents for each black-and-white print and 23.2 cents for each color print. Add another penny-per-page for paper costs.

When vendors offer TCO estimates, buyers should do the same calculations using their own mix of print jobs — the expected volume and type of printing — according to Charles LeCompte, editor and publisher of "Hard Copy Observer." LeCompte says the buyer's estimates must consider factors such as the percentage of black-and-white printing, the area of each color page likely to be covered by color images and whether a printer requires special, expensive paper.



Sharp output balances minor complaints

By Kevin Burden

At 3 page/min. in color and 12 page/min. in monochrome, the Optra C color laser printer from Lexmark International, Inc. isn't fast. But users say its print quality is worth the wait.

Crisp photographic output is why the four users interviewed for this review bought the Optra C. The printer costs $6,849, which users say is negotiable. The price surprised buyers who thought they needed to pay more to get this kind of quality.

Complaints were fairly typical for this type of product. According to users, papers jam in times of heavy usage, most often from the top tray. Color calibration requires a lot of tinkering, they say. And the 110-pound Optra C is heavy, so you'll need a sturdy cart, which Lexmark doesn't make.

The following user companies were interviewed in the following order:

- Ross Products Divison, Abbott Laboratories in Columbus, Ohio.
- Continental Office Furniture in Columbus.
- High Plains Graphics in Jefferson, Colo.
- Penn Racket Sports, Inc. in Phoenix.

Output quality

The Optra C prints in 600 by 600 dot/in. resolution and supports three color-screening techniques: continuous tone, which blends colors for photographic quality; color grade for halftone images; and stochastic mode, which eliminates recurring patterns by placing dots randomly.

"Its photographic quality is what sold us," says Harry Emmans, vice president of High Plains Graphics, a greeting card company. "If you placed half a photo on a card, it's difficult to tell where the photo starts and stops."

Dennis Herring, a PC specialist at Ross Products Division, Abbott Laboratories and one-time Hewlett-Packard Co. loyalist, says he chose the Optra C because its photo printouts didn't have the grainy look of HP DeskJet images. "They're clear and sharp — exactly like real photos," he says. Optra C has variable gloss settings to enhance its photo output.

The DeskJet's thermal ink-jet technology isn't directly comparable to the Optra C's laser technology. But users say output of all kinds should be evaluated when you shop for a printer.

Optra's text quality is "perfect" says Monica Stoller, marketing manager at Continental Office Furniture. "Whether it's color or monochrome, it's beautiful."

Optra works with Adobe Systems, Inc. PostScript Level 2 and Enhanced Printer Control Language (PCL) Level 5 fonts, although PCL is extremely slow. "We're talking three to four minutes per page," Herring says. (See "Lexmark Responds" below).

Lexmark International's Optra C *offers higher-quality output than users expected for its $6,849 price tag*

The Optra C shines in printing photographic images and text, but its quality falls short when it prints thin underlines or large areas of solid color, Herring says. "Lines are fuzzy around edges, and the colors in large areas aren't perfectly consistent," he says.

Stoller reported similar problems, but she says tweaking Optra C's color managers alleviated them. Lexmark offers color managers for most high-end graphic applications such as those from Quark, Inc. and Corel Corp.

However, those color managers don't help if users aren't running those supported applications.

All of the evaluators also considered the Tektronix, Inc. Phaser series of printers. "The quality of the Phasers is as sharp as the Optra, but it uses wax and scratches unbelievably," Stoller says.

Installation

Installation was mostly uneventful for evaluators. "All the drivers come with the unit — it's a piece of cake," Emmans says. Users only reported problems in connection with Windows NT. "NT drivers are not very good in my opinion," Herring says. "It was the only driver that wouldn't print headers and footers on Web pages," he says.

Ownership costs

The Optra C works on a four-color cartridge system: black, cyan, magenta and yellow. At $100 each, its cartridges are more expensive than typical $30 color ink-jet cartridges. "But they don't run out nearly as fast," Herring says. Only their personal quests for higher print quality drives users to better paper grades. "We don't get as ticked off as we used to when people print personal stuff because it doesn't cost as much as ink-jets," Herring says.

The Optra C's consumables compare with those of laser printers such as HP's LaserJet, but they are still slightly more expensive, Herring says.

Technical support

There are three options for outside technical support: Go to Lexmark directly; go to the printer reseller; or use a third-party support provider.

These evaluators opted for the latter two, but all of them have experience with Lexmark's support team through its one-year, on-site warranty. "They knew we needed it fixed quickly, so instead of sending a technician out, they talked us through the problem over the phone," Herring says.

Ease of service

The four-line control panel on top of the Optra C spells out the status of print jobs and consumables. Users were impressed with its MarkVision utility, which delivers all status information to PCs. The utility is available for Macintoshes, Windows 3.1 and IBM's OS/2 Warp. A Windows 95 version is due in November. ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line.

Lexmark responds

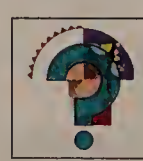
PCL performance

PCL requires more work from the application and driver on the workstation, which is one reason why PCL performance is slow on complex pages. Fast systems processors and large amounts of memory are the best ways to increase PCL speed.

NT drivers

The problem with the NT 3.5 driver is it doesn't let users change specific printer features in the PostScript Printer Description. However, NT 4.0 drivers will allow it.

The Optra C's inability to print World Wide Web page headers is due to the engine's paper-gripping design, which prevent it from printing the top 10mm of a page.



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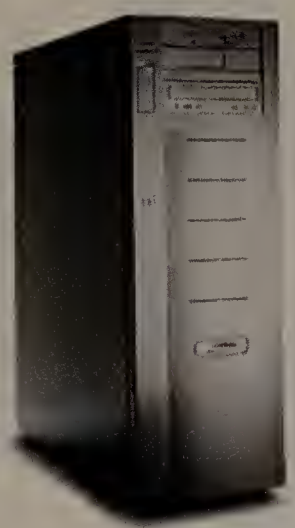

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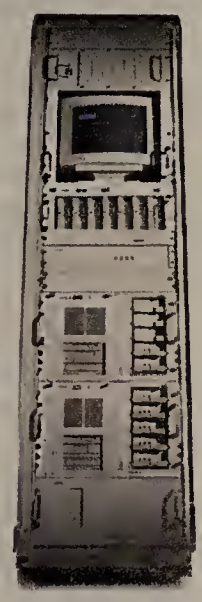

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In Depth: Interview

Want more Dave? You can find the full text of this interview at our Web site at http://www.computerworld.com.

Dave Barry for Dummies

Is America's funniest guy a closet techie? Well, he went to Comdex, surfs America Online and — we are not making this up — hangs out at CompUSA just for kicks.

Fans of humor columnist Dave Barry recognize him as the guy who can find hilarity in such topics as Comet Hyakutake, Beach Boys lyrics and methane-engorged cattle. But the Pulitzer Prize-winning writer, whose column appears in the *Miami Herald*'s *Tropic* magazine and is syndicated in hundreds of newspapers, is also a laptop-toting technoid-in-training. In fact, his 17th book, due this fall and tentatively titled *Dave Barry in Cyberspace*, will no doubt do for our understanding of technology what Rush Limbaugh has done for rational debate.

Computerworld Editor Paul Gillin recently caught up with Barry and his Toshiba Portege in New York, where the author was shamelessly promoting his recent book, *Dave Barry's Guide to Guys*. Barry distinguishes men from guys thusly: Christopher Columbus was a man. Whichever astronaut hit the first golf ball on the moon was a guy.

CW: *Do you think computers are funny?*
Barry: They're a lot like cars. You always want a new and faster one, but you don't know for what. Like, I don't know what RAM is, but I know I need *a lot*. They're funny until you suddenly discover they just locked up 500 words into an 800-word column, and you haven't saved. Then they're not funny; they're tools of Satan. Really, Satan will come through the wire, and sometimes you'll actually see your monitor spin around like in *The Exorcist*.

CW: *Do you think they make people more productive?*
Barry: Yes, but there's a steep learning curve. There are a lot of people who get the computer and end up diddling with it for the rest of their careers. We have guys like that at the *Miami Herald*. They used to be functioning, practical reporters, and they mutate . . . from journalists into computer people.

Windows is a great tool for them. It offers you so many things to do that aren't productive. You can not only change the screen colors, but the icon size and typeface . . . all the things that have nothing to do with writing.

CW: *If you were in gym class with Bill Gates, what would you do with him?*
Barry: I'm sure what all his other friends did: hang him upside down over the toilet. Wouldn't it be funny if it turned out that when Bill was in high school, he was a big jock and a stud muffin? I don't think that's likely, though. At Comdex, he was like Elvis. In fact, in my book I have a part called "Elvis in the Desert." He was *huge*.

CW: *What was Comdex like for you?*
Barry: Mars. At one point . . . I'm carrying this 800-pound bag of literature, and this woman with a pretty much translucent blouse comes up to me and [gets right in my face and] goes, "Client/server?" I don't even know what that is. And I'm one of those people who likes to go into CompUSA and just look at stuff. To be in a place where people were way beyond where I was, I felt almost normal.

I was struck by the high level of greed. I thought it was going to be more people into the coolness of computers. I didn't realize that everyone wants to be Bill Gates. I read about this Netscape guy who's 11 months old, and he's worth $100 trillion.

But I did think it was interesting that this event so devoted to avoiding the confines of the physical world is held in a place where you cannot get a cab unless you have a machine gun.

CW: *Your current book is about guys. Now which is a guy's computer: the PC or the Macintosh?*
Barry: No question. The PC is a guy's computer because you have to screw around with it and hop it up. With a Mac, you buy this wonderful, functional thing out of the box, but *somebody else* got to do all the hard stuff. What fun is that? Give me a computer you have to wrestle with, and that's a guy's PC.

CW: *Our readers are data processing people. Are they guys?*
Barry: Oh, definitely. The computer world is guy-infested. It's one of the fields where you can be relentlessly immature and still be highly successful. How you present yourself personally is irrelevant. I mean, [look at] Bill Gates. Being a suave, smooth salesperson isn't important.

CW: *Has your computer ever done anything funny to you?*
Barry: I swear that in every computer there's a little random-message generator that puts words on my screen just to make me feel that I have no clue. Not too long ago I got a message that said, "Packet reflection error detected," and I could almost see the computer going, "Heh, heh, heh. Let him figure *that* out."

CW: *How much time do you spend on the Internet?*
Barry: In the last couple of months, it's been a couple of hours a day because of the book. I spent a lot of time on chat lines on America Online. That's not the information superhighway; it's the random-chat-meaningless-verbiage superhighway. And I spent a lot of time browsing on the Web because it's the farthest outpost of juvenile weirdness. It's like a look into every little dormitory room in the world.

CW: *What effect do you think the Internet will have on the way we live?*
Barry: The biggest overall effect is that we'll have far better knitting, manicuring and guitar-playing skills — whatever we decide to take up while waiting for pages to appear.

CW: *For about $10,000 a month you could rent a T1 line.*
Barry: Ten grand, eh? Well, judging by my son's use of AOL, that could be a cheaper way to go. He's in this game called Federation where you win millions of Groats, but Groats are not redeemable for AOL dollars.

CW: *How do you handle flame mail?*
Barry: Well, I don't get it because I don't publish my E-mail address. But you have to realize that with everything on the Web, the odds are pretty good it was generated by a 14-year-old. It may look good — as if it was put there by Stephen Hawking — but the hostility, [the] super-cool cutting down, is characteristic of junior high school.

CW: *You've no doubt come across the multiple Dave Barry Web sites. What do you think of them?*
Barry: Well, there are days when I wish there was more awareness of the copyright laws. . . . I guess it's a little flattering, although you like to think that people have more to do with their lives than think about *my* life.

CW: *Did you consider an Internet-based promotion for the latest book?*
Barry: No, but the book that's coming out in the fall — *Dave Barry in Cyberspace* is the working title — I hope will have a cyber book tour.

CW: *Do you ever worry about your son being on AOL as much as he is?*
Barry: No, I don't. I have the same attitude about television or movies or books. To me, that's all learning, and I trust him to figure out what's right and wrong. I'm sure he sees X-rated stuff, and any parent who thinks their child doesn't is deluded. The important thing is that when he sees something sick, he knows that it's sick.

CW: *Do you have any opinion on the Communications Decency Act?*
Barry: I think it's stupid and a waste of time and money. Kids are learning to make bombs on the Internet? Well, the same thing has been available on paper for a long time. It's ridiculous to pick this particular medium just because it's the most publicized one.

Can you imagine if the government had regulated the Internet from the start? "We hope that by the year 2007, we'll be able to show you *pictures*, just as soon as we get approval from the House Agriculture Subcommittee."

CW: *Would you share your E-mail address?*
Barry: No! Somebody once printed it in a book, and I got hundreds of messages a day, all of which came down to "Are you really Dave Barry?" And if I said yes, they said, "No, you're not." ■

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COMPUTERWORLD

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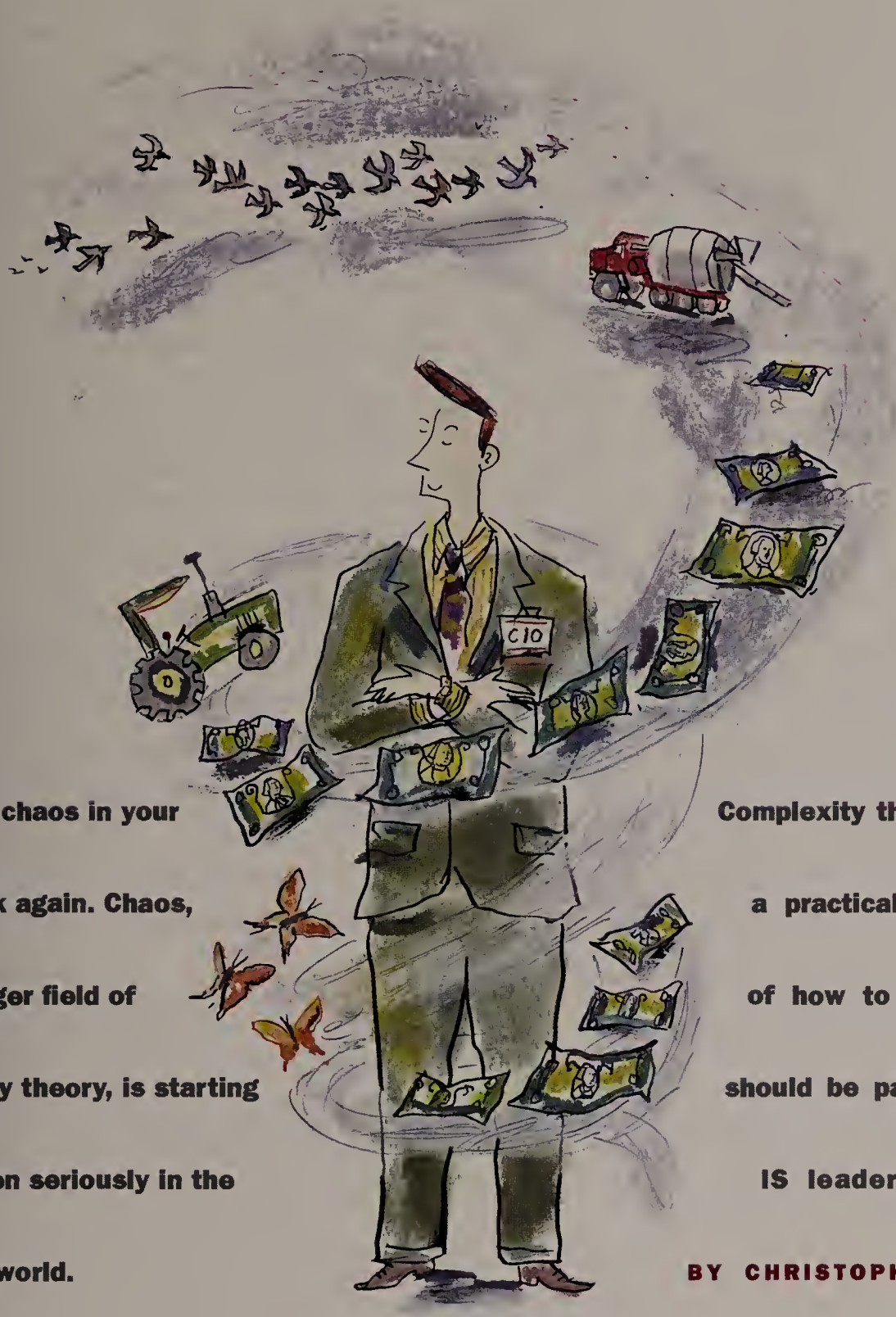

Too much chaos in your life? Think again. Chaos, or the larger field of complexity theory, is starting to be taken seriously in the business world.

Complexity theory — and a practical knowledge of how to apply it — should be part of every IS leader's toolbox.

BY CHRISTOPHER MEYER

Chaos and the IS executive

When the subject of chaos, or complexity theory, comes up, most chief information officers wince and say, *"No thanks, more chaos is the last thing I need."*

While complexity theory is far from a mainstream management tool, some brave souls are evaluating how the new science can be applied to their businesses. Companies such as General Motors Corp., Citicorp, Swiss Bank Corp. and Deere & Co. have even built applications using complexity theory that help to cut costs and create value. But for the science to take hold in corporate America, CIOs and their IS departments must become more involved.

Complexity theory starts with a core idea that simple objects, or agents, can interact to create elaborate and unexpected behavior. Take the early model called "boids," developed by computer animator Craig Reynolds in 1987, which simulates the flocking behavior of birds.

In Reynolds' model, each boid is represented by a wing-flapping symbol that is programmed to obey three simple rules: 1) fly in the direction of the other boids, 2) try to match velocity with neighboring boids and 3) avoid bumping into things. When the simulation begins, the boids are positioned randomly in space, yet they soon form a flock that wheels and turns and reacts realistically to obstacles placed in its path, much like a flock of birds.

The tendency of the boids to flock is called emergent behavior. The turning of the flock is not designed; it emerges when the boids, or agents, interact with each other and their environment. This behavior, not of each bird but of the flock, was accurately modeled through simulation.

Some corporations are using agents, emergent behavior and other concepts of complexity theory to improve inventory control, logistics management and production scheduling. The resulting productivity gains and cost savings are often dramatic.

Consider GM's Fort Wayne, Ind., truck manufacturing facility. In the early '90s, Dick Morley, inventor of the programmable logic controller in the late 1960s and now an advocate of complexity-based computing solutions, dismantled the factory's command-and-control system for coordinating painting booths. He then designated each booth as an independent agent capable of "bidding" on new paint jobs, depending on the booth's ability to perform the work quickly and at low cost.

The tendency of the "boids" to flock is called emergent behavior. The turning of the flock is not designed; it emerges when the boids interact with each other and their environment.

This new, self-organizing paint system reduced color changeovers at paint booths by 50% and saved GM $1 million in paint costs alone.

Although Morley's system is elegant and effective, IS personnel at GM had limited involvement in the project. Morley's project team consulted with a core group of GM engineers and software specialists — many of whom were very skeptical of the paint booth work — but it was Morley's firm, Flavors Technology, that orchestrated the implementation.

If GM's small example of complexity theory in action, and the IS overhaul that goes along with it, can yield such positive results, imagine the impact CIOs could have in championing such practices in their own companies.

Deere's natural selection

There are any number of variations on the complexity theme. Bill Fulkerson, a staff analyst at Deere's Moline, Ill., engineering labs, solved the farm equipment maker's scheduling difficulties using a survival-of-the-fittest complexity-based approach.

At the Moline factory, the variety of customized planting equipment being assembled — 1.6 million possible unique models in all — makes generating an optimal production plan beyond the capacity of any traditional expert system, let alone any human. In the past, untold hours were eaten up in shuffling data to hammer out weekly manufacturing schedules that rarely came close to production targets.

Fulkerson, with the aid of Cambridge, Mass., software developer Optimax Systems Corp., resorted to using a "genetic algorithm" to produce the schedule. Genetic algorithm software, originally developed by professor John Holland at the University of Michigan, formalizes the process of natural selection to allow solutions to emerge, rather than be calculated.

Each night at Deere, a single PC on the factory floor downloads data from the plant's database and generates an initial set of trial schedules. These schedules are then permitted to "breed," or combine, to create new

Illustrations by Diane Bigda

and improved schedules. Each successive schedule is tested for fitness — whether it produces a more efficient throughput than the others generated during that iteration — and the fittest schedules are selected to breed with each other and produce new generations. Evolving solutions, rather than engineering them, is the essence of a complex adaptive system (CAS).

In Deere's case, roughly 600,000 offspring schedules are generated and tested overnight; the next morning's result is a schedule that's not perfectly optimal but comes very close. No worker is involved in producing the resulting work plan, other than turning on the computer and picking up the output. The solution is a product of evolution, not engineering.

Deere's results have been significant. Overtime at the Moline plant has been drastically reduced, while monthly production figures have increased.

As in GM's case, IS people were only peripherally involved with Deere's trial implementation of the scheduling system; Fulkerson's team and Optimax Systems pursued it as a side project that didn't attract much corporate interest until it started bearing fruit.

The company now plans to roll out similar implementations at other facilities, and IS professionals will have to make sure that factory systems' infrastructures can support the automatic, real-time data gathering required by the genetic algorithm approach.

Chaos at Cemex

While Deere and GM have leveraged CAS at the factory level, Cemex SA, the $3 billion Mexican cement and concrete company, is reworking its entire delivery system around complexity theory.

The problems Cemex faces in delivering ready-mix concrete to its customers involve so many constantly changing variables that scheduling defies linear, command-and-control optimization. Weather and capricious government site inspections can destroy a construction site's work plan in minutes. Work stoppages, due to lack of funds and materials, are frequent. Congested traffic in many Mexican cities makes matters worse, as ready-mix concrete is specially formulated for each job and has a short window in which it can be poured to achieve maximum effectiveness. On average, 50% of Cemex's orders are canceled on the day of delivery, and many others are rescheduled.

Imagine keeping track of 20 to 300 trucks within a service area such as Guadalajara or Mexico City and you have a sense of the mayhem Cemex deals with every day. "It's like being an oil tanker in the middle of a hurricane instead of a surfer," jokes Ken Massey, director of Cemex's Center for Business Processes.

With the help of a CAS approach,

The CIO's role in complexity theory

At some corporations that have applied complexity theory to real-world business problems, the IS department is involved only peripherally. Here are a few tips for IS leaders who want to raise their awareness of — and their profiles in — the application of complexity theory.

1. Get comfortable with the mind-set.
The first hurdle to tapping the energy of self-organizing, adaptive systems is to acknowledge that top-down, dictatorial control is not only inadvisable, it's also impossible. Instead, the role of the executive is to enable the organization to proceed by establishing the basic framework of rules and goals and then to recognize and support good solutions as they emerge.

"The logic behind chaos theory flies in the face of the education and training [CIOs have] received," remarks Ernie Vahala, retired group director of manufacturing engineering for General Motors Corp.'s truck division, who worked with Dick Morley on GM's paint booth project. "However, if they participate in the design of a complexity-based system and see how well it works, they tend to become converts," he says.

2. Learn about the theory and tools.
In order to get people to buy into complexity, IS leaders have to know enough about it to present its concepts to management in a nonthreatening manner. As with all management problems, the devil ultimately is in the details, and any work done now to understand the mechanics of tools and techniques such as genetic algorithms and simulation modeling will be well invested.

3. Keep your eyes open for that killer app.
The real payoff for an IS leader — and, therefore, the real vehicle for popularizing complexity within your organization — will come when you are the one to step forward with a complexity-based approach that promises and delivers better performance.

Scouting for those killer applications is not such a hunt in the dark when the search starts with a basic question: What problems in this business are crying out for optimal solutions but have too many conflicting constraints to be optimized?

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Massey's team took less than a year to transform Cemex's ready-mix concrete delivery system in Guadalajara from a tanker into a surfer. "The surfer has a great time riding the waves, while the tanker fights for survival," Massey says.

By combining revamped expert systems with global positioning satellite equipment, the new Cemex system can pinpoint the location of every concrete truck in close to real time and at very low cost. Manipulation of this data and other information about truck cargo, plant conditions and construction sites allows trucks to become independent agents within a network of plants, rather than appendages of a particular plant and held to brittle, centrally controlled schedules.

The delivery system can now react much more quickly to rerouting problems, thus freeing staff to focus on problems requiring human intervention, such as negotiating essential shipments of concrete ingredients.

For example, when the Cemex system receives changes in construction plans from a customer, the system can instantly identify orders for similar concrete formulas and reroute the appropriate trucks to plug emerging gaps in order fulfillment. Also, the system can divert trucks to nearby plants and have their formulas modified, thus fulfilling orders with trucks originally intended for other destinations.

These delivery system capabilities have allowed productivity of the mobile equipment to increase by 30%, or twice what was originally expected. Equipment maintenance costs per ton of concrete have dropped dramatically, as has fuel consumption. New orders are no longer lost because customers can get through to a phone system that had been previously tied up with truck-routing calls. Business is more evenly distributed across plants, and loading times have decreased accordingly.

The bottom line to the customer is that Cemex's delivery window has dropped from the industry average of a couple of hours to within 30 minutes, and the company is moving toward a 10-minute window.

Although Massey's team spearheaded the complexity implementation, IS professionals were involved throughout the process. Cemex's computer systems need a steady flow of real-time data to make the new delivery scheme work — a requirement that can't be met without a responsive information technology infrastructure. Cemex is looking to spread the use of this and other complexity applications into other parts of the organization, and the IS department will be needed at every step.

Cemex was able to boost productivity and cut costs by developing an expert system that allows its ready-mix concrete trucks to act as self-organizing, independent agents.

GE's solution

Another challenging optimization problem involves product design. General Electric Co. used genetic algorithms as part of a hybrid artificial intelligence solution to improve bottom-line performance in the design of the Boeing 777's jet engines.

While addressing stringent design specifications for the Boeing aircraft, GE engineers determined that simplifying the engine's compressor would go a long way toward meeting design goals. However, the compressor already had been refined to the point that human designers were struggling to find any incremental improvements.

With deadlines fast approaching, project managers opted to use an engineering software package developed by GE's research and development lab. The package, called Engeneous, allows a design to evolve to improve its match with a large number of constraints.

After a number of critical design factors were input, one simple but profound rule was introduced: Design a compressor with only six stages, instead of the previous seven. "At this point, we were just looking for new ideas and were curious to see what Engeneous would produce," says Peter Finnigan, a research manager on the project. As it turns out, the software produced very powerful results.

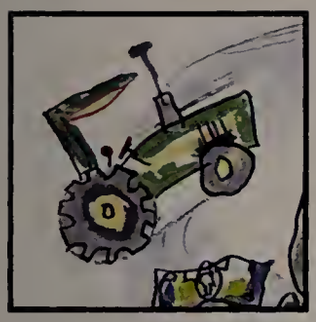
Engeneous coded each design factor as a "digital chromosome," then mixed these chromosomes together to form trial designs. After a breeding and fitness testing process similar to the Deere scheduling program, GE had a viable six-stage compressor design in less than a week.

Systems like Engeneous often help refine designs that have been reworked heavily by humans, Finnigan notes, but the compressor solution yielded additional efficiencies on top of the design criteria. For instance, the six-stage design required less metal, which meant less weight and, thus, a greater-than-anticipated decrease in fuel consumption.

Of biodiversity and whirlpools

Complexity theory's usefulness is not limited to the world of manufacturing; it also has been embraced by the financial services industry. For example, Citicorp's new complexity-based approach to handling portfolios is an application of biodiversity to portfolio management.

Through years of experience, Citicorp has developed risk-management algorithms for swapping currencies and around-the-clock trading. These single-best solutions could be applied across all of Citicorp's investment portfolios,



Farm equipment maker Deere & Co. solved its production scheduling difficulties by using a genetic algorithm that allows near-optimal solutions to evolve, rather than be calculated.

but the firm won't allow an across-the-board application of one procedure. That would create a "monoculture," a basket of portfolios susceptible to the same external shocks. Instead, Citicorp tries to maintain diverse near-best approaches to risk management, thereby protecting itself from the exposure inherent in a monoculture.

With the aid of complexity theory, the firm has developed multiple risk-management algorithms that constitute a healthy ecosystem for its portfolios, safe against any one effective attacker.

Another application of complexity theory in financial services is to predict the unpredictable. For example, although CAS cannot predict the appearance of a whirlpool in a stream, it can help to identify the conditions that create the whirlpool and the likelihood, based on those conditions, of its persistence for a given period.

Finding the conditions that create financial whirlpools is allowing Swiss Bank to exploit periods of turbulence in financial markets by recognizing patterns of persistent factors. Building on basic work done by The Prediction Co., based in Santa Fe, N.M., and founded by chaos researchers Doyne Farmer and Norm Packard, Swiss Bank has created a system that allows it to rapidly identify the development of a turbulent situation in the market, make the right moves, then stop making those moves before they start to produce losses.

Other investment firms, too, are experimenting with the use of complexity-based systems to gain faster and more in-depth comprehension of seemingly chaotic market forces.

What's next

Successful business applications make it clear that chaos, or complexity theory, is not simply the stuff of ivory-tower musings. The new sciences, and the new mind-sets they entail, are helping hard-nosed managers to derive real, measurable business-performance improvements.

But it's still the early days. Inroads in highly analytical, computational fields such as engineering and financial modeling undoubtedly will continue, but other applications such as digital organisms — recently developed by Excalibur Technologies Corp. to recognize fingerprints, faces and Japanese kanji characters — could someday be employed in resume scanning by human resource departments, allowing companies to more efficiently and accurately match job openings with prospective candidates. Also, pattern recognition technology like that used by Swiss Bank may direct more precisely targeted marketing campaigns.

Indeed, someday, we may be able to model high-performing organizations in terms of the self-organizing behavior of individual employee "agents" and the environmental factors to which they adapt.

Further in the future, we may come to see CAS not as a tool kit for operations management, but as an element of a new paradigm, with evolution succeeding design as the model for managing complex systems. The increasing connectedness of the "econosphere" makes economic agents, such as the trucks at Cemex, elements of an evolving organism, rather than cogs in a static machine. Perhaps the machine metaphor for business has reached the limit of its usefulness, as businesses, by becoming more connected, become more complex. ♦

Additional reading

◊ "Chaos Inc." by Simon Caulkin, in *Across the Board*, pages 32-36, July 1995.

◊ *At Home in the Universe: The Search for the Laws of Self-Organization and Complexity*, by Stuart Kauffman, Oxford University Press, New York, 1995.

◊ *Out of Control: The Rise of Neo-Biological Civilization*, by Kevin Kelly, Addison-Wesley Publishing Co., Reading, Mass., 1994.

◊ *Hidden Order: How Adaptation Builds Complexity*, by John Holland, Addison-Wesley Publishing Co., Reading, Mass., 1995.

◊ Symposium: Dick Morley's Chaos in Manufacturing Conference. Talk to people who have used complexity theory successfully in the business world. Contact R. Morley, Inc. at 1824407@mcimail.com or (603) 878-4365.

About the Author

Christopher Meyer is director of Ernst & Young's Center for Business Innovation (CBI) in Boston, the research and development arm of Ernst & Young's consulting services. He is leading the firm's exploration of complexity theory and its use in the business world. Ross Little, a research associate at CBI, provided background material for this article. Meyer can be reached on the Internet at chris.meyer@ey.com.

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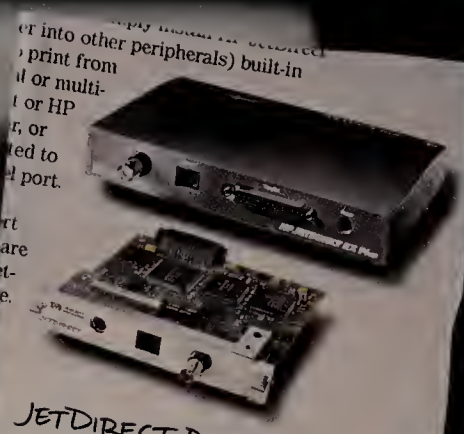

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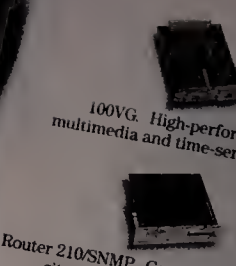

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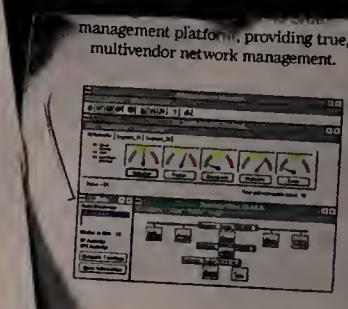

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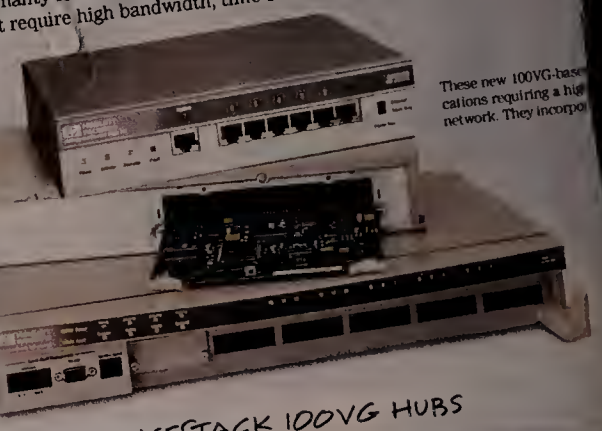

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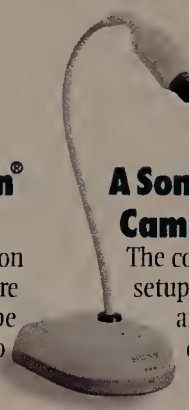

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4. The first Email message was sent 25 years ago between Los Angeles and what other city?
5. What is the resistor color code for the number 3?"

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Computerworld Editorial Calendar

July - October, 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
July 1	June 14	June 21	**Closer Look:** Trends in desktop hardware and servers	
July 8	June 21	June 28	**Buyer's Guide to High-Speed Modems:** With users turning to the World Wide Web and demanding remote access to graphically-intensive applications, modems are playing an increasingly important role in corporate life. This Buyer's Guide will explore state of the art modem technology, look at where new modems work or need work, and help IS managers decide which class of modem is right for their applications.	**Informix User Group** Chicago 7/9 - 7/12
July 15	June 28	July 5	**Closer Look:** Intranets Lessons learned **IS Leadership Series**	
July 22	July 5	July 12	**Managing:** The IS executive as entrepreneur **Intranet Series**	
July 29	July 12	July 19	**Buyer's Guide to Sales Automation Software:** When IS moves to give sales representatives new tools to make sales presentations and log orders, a broad variety of technologies converge — notebooks, remote access software and databases. This Buyer's Guide will look at how IS managers address the special needs of this crucial application, and examine some of the commercially-available software designed to meet their needs. **Special Report:** Data Warehousing Second in a two-part series focusing on using and managing data warehouses. This issue will profile best-in-class examples of data warehousing and look at applications in data mining.	
Aug.	June 26		**Computerworld Client/Server Journal** Extended Enterprise: Managing dispersed groups of programmers Product Focus: Application development (GUI builders, compilers, componentware, tool suites, HTML page builders) Careers: Skill-ware — does it work?	**Harvey Study** Object World, CA World, Networks Expo, Mobile World, Networld + Interop, SIM Fall Conference
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications. **Special Report:** The Future of Computing	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series**	**Object World** Starch Study San Jose 8/20 - 8/22
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Intranet Series**	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Starch Study Dallas, 9/10 - 9/12 **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs. **IS Leadership Series**	**Networld + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	The best new books for IS managers **Special Report:** Top Web sites for IS managers **Intranet Series**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct.	Aug. 21		**Computerworld Client/Server Journal** Extended Enterprise: Road warrior war stories Product Focus: Networking (routers, network management suites, diagnostic tools, intranet components) Careers: The end of the specialist	Unix Expo Software Developers' Conf.
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	

* Includes ads within special editorial features and premium positions

Editorial contacts (508) 879-0700: *Closer Look:* Johanna Ambrosio, *Buyer's Guide:* James Connolly, *Managing:* Allan Alter, *Special Report:* Joe Maglitta and Bruce Rayner, *IS Leadership Series, Intranet Series, Best Places to Work:* Bruce Rayner, *Client/Server Journal:* Alan Alper

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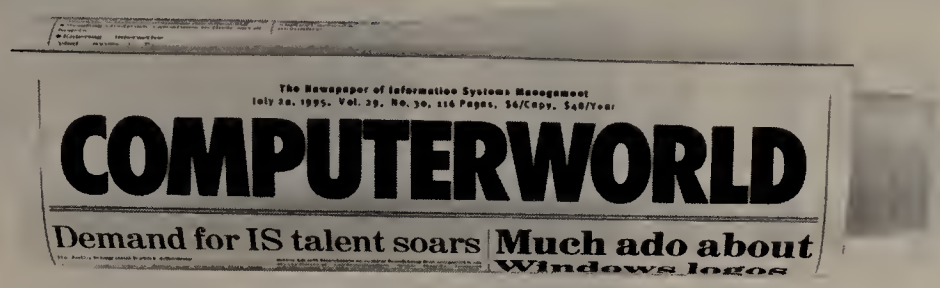
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  - ☐ **Denver & Colorado Springs Careers** on June 3rd (deadline: May 30th)
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Computer Careers

Wowing 'em on the Web

By Leslie Goff

Just what role do IS professionals play in a World Wide Web site development and maintenance project? Computerworld *spoke with four Web developers to get the scoop.*

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Mother's Day is coming May 12, so don't forget Mom!
And Family Planet will help you celebrate in style: free ecards, a place to pay tribute, hilarious stories, a fun quiz, and more.
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Web site page designs *for Fender Guitars and ESPN's SportsZone*

CW: What are the business or social drivers behind your site?

OSINSKI: The Body is a multimedia AIDS and HIV information resource. We carry the materials of some 20 nonprofit HIV and AIDS organizations ... and display it all in one place.

STEWART: The FenderWorld site is in maintenance mode now. The role of IS here is more on the back end. If the site were being developed now, I would be making decisions like whether to program our own database for matching serial numbers with guitar models or purchases.

BREM: For ESPN, SportsZone is a site worth hanging its brand on. For Starwave, it's a product; it's derived from our online services business. The content drivers are timeliness and breadth and depth of coverage. We're shooting for live pitch-by-pitch coverage of baseball games, for example.

RETTIG: Our client already has a good, basic first-generation Web site with information about their company and products. This site will focus on providing collaboration among employees globally as well as between the company and customers.

CW: As an IS staffer, what is your role in the Web site project?

OSINSKI: Everything that goes up at the site, I put there, so I do a lot of [Hypertext Markup Language] programming. I also coordinate with the graphics people.

STEWART: We're moving the site here to our own servers, so I'm overseeing that. With an assistant, I monitor the access logs and maintain the site from a technical point of view. I also work on educating the client.

RETTIG: Our contribution will be our technical understanding of the Web and of the Internet and the effective use of the technologies available. A goal is to get [our client's] staff up to a maintenance level.

CW: Why were you selected?

STEWART: I approached local advertising agencies about opportunities. This company turned out to be the perfect match because I come from a music background.

BREM: I had been a Unix systems administrator. I hadn't worked on any Web sites, but I had worked on the Internet and used it as a resource. I had a decent understanding of data communications concepts and TCP/IP.

CW: What specific IS skills and experience have you leveraged on this project?

STEWART: I had a working knowledge of Unix and a broad knowledge of networking and Novell. I learned HTML about a year ago, in two or three hours — but I'm not a programmer. For six years, I was a computer digital sound editor for Sony Pictures. My team won an Academy Award for sound effects production for *Dracula* (the 1994 Francis Coppola version).

OSINSKI: Mainly my HTML experience. And now, I'm using [Common Gateway Interface] skills, and I've been utterly delighted because CGI can be a lot of fun.

BREM: I had worked on an enterprise backup system, which had involved integrating off-the-shelf software and everything from Sun workstations to Sequent minicomputers. So I can move from task to task across many platforms.

RETTIG: My knowledge of objects has given me a big head start on Java. But project management is a big skill I've used. The Web demands a very multidisciplinary team.

CW: What new skills have you had to acquire, and how did you go about it?

OSINSKI: I've had to employ old ones that I didn't expect to use again, especially project management — coordinating all of these people.

BREM: Data communications skills. I learned it all on the job. I researched questions on the 'net.

CW: How would you advise IS professionals who want to get involved in Web site development?

OSINSKI: Surfing around is the best way to find what works and what doesn't. If you see something that's really neat, find out how it was done.

BREM: Create your own Web site and work with the technology in your spare time, even if that's not needed in your current position.

RETTIG: All the software you need is out there on the 'net free of charge, so go for it. It's not like anyone has years and years of experience on you, so if you have good IS skills and good learning skills, you can teach yourself and use that to get a job. ■

Goff is a freelance writer in New York.

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Bellevue, Wash.
A new-media company specializing in the Internet. It produces ESPN's SportsZone site.

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Chief site engineer
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New York
A community-oriented information resource on all aspects of AIDS and HIV

http://www.thebody.com

GREG STEWART
Vice president of technology
The Phelps Group
Los Angeles
An advertising agency that produces FenderWorld, a customer-friendly corporate image site for Fender Guitars

http://www.fender.com/

MARC RETTIG
Principal
Burning Door
Chicago
An Internet strategy and development firm. Rettig is codeveloping a second-generation site for an unnamed Fortune 100 electronics manufacturer.

Regional Scope: Iowa/Nebraska

Ease and opportunity

By Lynn Haber

For many information systems job seekers, the central states of Nebraska and Iowa tend to get overshadowed by more bustling places such as Massachusetts, New York and California. But there are plenty of career opportunities in the Corn Belt, and the living is easy.

IS salaries are typically lower in the Corn Belt, but you can't put a price on the quality of life

Unlike in many other regions, businesses in central U.S. tend to be in the early stages of client/server development. That means growing IS employment opportunities for people with client/server skills and continued demand for mainframe talent to keep legacy systems running.

But don't expect big paychecks. Salaries in Nebraska and Iowa can be as much as 20% lower than those found in major metropolitan areas. The good news: The cost of living also is lower. ■

Haber is a freelance writer in Norwell, Mass.

Jobs come a-callin'

By far the greatest IS job opportunities in Nebraska are in telemarketing.

"Twenty-two percent of our state's workforce is in telemarketing," says Gene Ballantyne, a division director at Robert Half International, Inc., an employment recruiter based in Omaha. West Telemarketing, Inc., also in Omaha, is the state's 12th-largest employer. Otherwise, Nebraska's IS hiring trends mirror those of Iowa, its neighbor state. Manufacturing, insurance and banking are the other industries with the largest IS employers. The software and transportation industries have gotten smaller, but the state is attracting new firms, such as telecommunications players AT&T Corp., MCI Communications Corp. and Sprint Corp.

In banking, First National Bank & Trust Co. in Columbus is hiring network administrators to oversee a new distributed computing architecture. First National is a Windows shop that migrated from a mainframe architecture to client/server in 1988. The skills shortage in the local market prompted the company to provide LAN administration training to local college students, according to Larry Marik, senior vice president.

Credit-card processing centers, such as First Data Resources Corp., are hiring on a large scale. First Data is Nebraska's second-largest employer, following Offutt Air Force Base.

First Data has 375 technical openings, including programmer analyst, software development analyst, software developer manager and software engineer, says Karen Hobbs, vice president of employment. "With no unemployment on the technical side in Omaha, finding talent for these positions is extremely difficult," she says.

Other skills in high demand include experience with Microsoft Corp.'s Windows NT and Access, Informix Corp. databases and C and C++ with object-oriented methodologies.

The shortage of IS talent is pushing companies to get help where they can. "With client/server just getting going in Nebraska, many companies are hiring contractors so that they can hit the ground running," Ballantyne says.

Fields of dreams

What's cropping up in Iowa? Lots of jobs for information systems professionals.

The biggest IS employment needs in Iowa are for IBM AS/400 professionals, Unix systems administrators, client/server program developers and management-level positions such as project managers and application development managers.

"For the first time, we've seen the demand for Unix systems administrators surpass that for Novell LAN administrators," says Mark Whitcomb, division director with Robert Half International in Des Moines.

The insurance industry is one of the state's largest IS markets. Iowa is home to 40 large insurance firms, and Blue Cross/Blue Shield of Iowa is the state's fifth-largest employer. "Des Moines is our insurance base, and job opportunities in this industry have always been good," Whitcomb says.

American Mutual Life Insurance Co. in West Des Moines is moving its 1,600 employees from mainframe terminals to desktop PCs. "That's driven up our hiring of PC network professionals," says Kathy Bauer, director of human resources at American Mutual. But demand is greater than supply, she says, and the company has taken steps to attract IS recruits.

"We have a 10% premium on information system specialists because supply is low right now," Bauer says. Without the premium, IS professionals at American Mutual can earn $24,150 to $36,250 as an entry-level PC network troubleshooter. A high-level IS management professional can earn between $38,850 and $64,750.

But the insurance industry relies mostly on mainframe systems. Microsoft Corp.'s Visual Basic and object-oriented programming are just beginning to attract interest. Low unemployment rates keep the supply of mainframe talent low.

"Finding mainframe Cobol, CICS and [job control language] programmers is very difficult," says Lynn Graves, director of employment services at The Principal Financial Group, Iowa's largest employer, with more than 8,000 employees in the Des Moines area.

Where to look

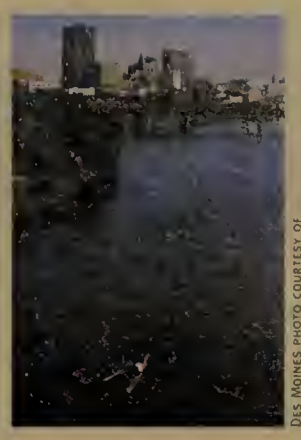
The area's largest employers include:

IOWA

- The Principal Financial Group — 8,300
- Iowa Health System — 5,000
- Hy-Vee Food Stores — 2,595
- Mercy Health Center of Central Iowa — 2,200
- Blue Cross/Blue Shield of Iowa — 2,085

NEBRASKA

- Offutt Air Force Base — 20,000
- First Data Resources — 2,500+
- Mutual of Omaha Insurance — 2,500+
- University of Nebraska Medical Center — 2,500+
- Omaha public schools — 1,000



Des Moines photo courtesy of Iowa Department of Economic Development

What will it pay?

IS professionals can expect to earn the following in the Iowa and Nebraska job markets:

SYSTEMS DEVELOPMENT

- Mainframe programmer/analyst $35,000
- Midrange systems programmer/analyst $36,400
- Client/server programmer/analyst $34,200
- GUI programmer/analyst $33,500
- Software engineer $40,200

SPECIALISTS

- Database administrator $52,700
- LAN administrator $37,700
- PC software specialist $31,300
- Systems administrator/manager $41,900
- WAN administrator $36,700
- Systems programmer $53,100
- Systems architect $38,900

MANAGEMENT

- MIS director/CIO (Small to medium shop) $61,300
- CIO (Large shop) $81,200
- Manager of business applications $62,900
- Applications development $64,100
- Project manager $55,700

DATA CENTER

- Data center manager $61,300
- Operations support/ senior technician $81,200
- Communications/ network senior operator $62,900

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SOFTWARE ENGINEER required. Design, analysis & implementation of Client/Server systems on Windows, Windows NT & UNIX platforms. Front-End programming using C & C++ as well as experience with Microsoft Foundation Classes & Server (SDK) Software Development Kit. Design & coding of graphical user interfaces using Visual C++ & Visual Basic. Back-End programming in Oracle Version 7.X & Network Programming using FTP (File Transfer Protocol). Bachelor's Degree or its equivalent required in Math, Computers or Engineering, plus 2 years experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary - $48,000/year for a 40 hour work week. Interested applicants send resume to the Oklahoma State Employment Service, 110 S. Hartford, Suite 106, Tulsa, OK 74120 (ID# 7207). Phone No: (918) 592-2110. Refer to Job Order #212528. Ad paid by an Equal Opportunity Employer.

Consultant, 40hrs/wk., 9am - 5pm, $40,000/yr. Design, develop, implement & test software in conjunction w/hardware product development for TCP/IP telecommunications. Configuration management & system administration for distributed database. Tools: UNIX; C/C++; X-Windows; CLEARCASE; GLANCE; SOFTWINDOW; FRAMEMAKER; TCP/IP; UDP network programming & administration; CARE; SQL; INFORMIX; INFOMAN; KORN SHELL; AWK; SED; PERL; VI. M.S. in Computer Science as well as six months experience as Consultant or Research Asst. required. Previous experience must include: system administration; TCP/IP; UDP network programming & administration; C; UNIX, SQL; configuration management. Graduate education must include one course on distributed databases. Submit resume to: Job Service of Florida, 2312 Gulf-to-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4090, Re: Job order #FL-1426932.

Senior Software Engineer, Ames, IA: Design, dvlp & maintain comp progs & systs using advanced mathematical methods such as Finite Element Analysis. Write comp progs w/ graphical user interfaces to function under UNIX operating system, using X Windows, ORACLE, C & Fortran. 6 mos exp using Finite Element Analysis which may be gained through work or academics or a combination of both. M.S. in Mechanical Engg. Must have 2 yrs exp in job offered. 40 hrs/wk; $37,000/yr. Send resumes or letters in dupl to: D.E.S. Workforce Center, PO Box 410 (120 Kellogg Ave), Ames, Iowa 50010. Please refer to Job Order IA1100503. Employer paid advertisement.

Systems Analyst needed for computer consulting firm located in San Francisco, California for assignment in Salt Lake City, Utah. Job duties include: develop, design, implement, maintain, and enhance a variety of software. Re-engineer and maintain on-line data systems. Design adjustable standard software according to previously established business requirements and functional enhancements. Will use Windows, DOS, COBOL, DB2, CICS, JCL, Microfocus Cobol, Intertest, Microfocus Workbench, SDF, DELPHI, and OS MVS. Applicant must have 3 yrs. exp. in the job duties described above or 3 yrs. exp. as a systems analyst to include 3 yrs. designing and developing computer software and using COBOL, DB2, CICS, JCL, and OS MVS. 40 hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $47,000/yr. Please submit resumes (no calls) to Job Service, ATTN: Pat Redington, Job Order #3060215, E.S. Staff Services, 140 E. 300 South SLC, Utah 84111. Applicant must have legal authority to work permanently in the U.S. AN EMPLOYER PAID AD.

UNIX/Oracle Software Engineer required. Analyze, design, implement & test Oracle-7 & Oracle OLAP (On-Line Analytical Process) based client/server applications software. Develop GUI's (Graphical User Interfaces) using Visual Basic, C++ & Oracle tools including Oracle Sales Analyzer & Oracle Financial Analyzer. Extensive C & UNIX Shell programming as well as development & tracking of the source code control system (SCCS) on UNIX. Master's Degree or its equivalent required in Math, Computers or Engineering, plus 2 years experience in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout USA every 4 to 10 months - Employer paid. Must have proof of legal authority to work in the U.S. Salary - $47,000/year for a 40 hour work week. Interested applicants send resume to Job Service of Florida, 2660 W. Oakland Park Blvd., Fort Lauderdale, FL 33311-1347. Re: Job Order Number FL-1424737. Ad paid by an Equal Opportunity Employer.

Consultant, 40hrs/wk., 9am - 5pm, $50,400/yr. Design, development, implementation & testing of software applications for telecommunications & management information systems. Evaluate user requests for new applications, considering feasibility, cost, time, compatibility w/current system & computer capabilities. Graphical User Interface (GUI) development. Tools: C; UNIX; ORACLE; ESQL; X-Windows/Motif; Informix 4GL; Informix - SOL; R4GL. M.S. in Computer Science as well as six months experience in job offered or as Programmer required. Previous experience must include: C/UNIX; X-Windows/Motif; ESQL; Informix 4GL; Informix-SQL; R4GL. Submit resume to: Job Service of Florida, 2312 Gulf-to-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4090, RE: Job order #FL-1424448.

SOFTWARE ENGINEER required. Systems development & applications design/programming of client/server software configurators to analyze client installed software base to ensure concurrency with latest releases in Windows, OS/2 & UNIX operating systems. Provide systems & applications conversion programs based on source code analysis including applications required to control printers, modems, scanners, infrared input devices & other peripheral hardware. Program in C/C++ using MS-SDK (Software Development Kit), Borland OWL (Object Window Library) & MS-MFC (Microsoft Foundation Classes), database tools Btrive & Oracle & MS-Version Control Software. Three years experience required in the job duties described above. Must have proof of legal authority to work in the U.S. Salary - $40,000/year for a 40 hour work week. Interested applicants send resume to the Oklahoma State Employment Service, 3105 E. Skelly Dr., Room 215, Tulsa, OK 74105 (ID#7201). Phone No: (918) 749-6864. Refer to Job Order #212552. Ad paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER: (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $53,000/yr. Carry out the systems analysis, systems design, coding and testing of software application systems on a mainframe environment utilizing IDMSX and COBOL. Reqr. bachelor's degree in Computer Science or Electrical or Mechanical Engineering. Reqr. 5 yrs. expr. in job offered or 5 yrs. expr. in Systems Analysis &/or Programming &/or Engineering &/or Computer Consulting. Reqr. work expr. in dev. of s/w systems on a m/f environment and with IDMSX and COBOL. Employer is a s/w development/consulting firm. Relocation to client sites throughout U.S. for periods of 6 mos. to 2 yrs. required, "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 61896.

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SOFTWARE ENGINEER required. Analysis, design, coding & testing of image processing software on UNIX & Windows platforms using C/C++, Visual C++, graphics libraries & 3D Modeling techniques. Develop an Image Processing Library using various image processing algorithms & data compression techniques. Design Expert Systems to aid in troubleshooting. Master's Degree or its equivalent required in Math, Computers or Engineering, plus 1 year experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary - $41,000/year for a 40 hour work week. Interested applicants send resume to the Oklahoma State Employment Service, 1115 S. Aspen Ave., Broken Arrow, OK 74012 (ID#7210). Phone No: (918) 258-9591. Refer to Job Order #212511. Ad paid by an Equal Oppor-tunity Employer

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SOFTWARE ENGINEER to provide specialized consultancy to clients in the design, development, testing, implementation, maintenance and support of client/server GUI based Pension Evaluation and imaging systems on Windows, UNIX and Windows NT/networked local (LAN) and wide area network (WAN) platforms using object oriented design and programming, PowerBuilder, C++, Gupta SQL, RDBMS, Oracle, Sybase, MS SQL Server, SQL Talk, Erwin, SSI Imageman and Novell Netware; Also responsible for complete life-cycle project management to ensure that the requirements are delivered on-time and within budget. Require: B.S. degree in Management Information Systems with three years of experience in the job offered; M.S. degree in M.I.S. with one year of experience will be accepted in lieu of the B.S. M.I.S. degree and three years of experience; Experience must include at least six months in the development of imaging systems; Must be a Certified PowerBuilder Developer; Extensive travel to client sites within the U.S. Salary: $65,000/year; M-F, 8:30 a.m. to 5 p.m. Send resume to: William J. McDonnell, Principal, William H. Mercer, Inc., 3700 Georgia Pacific Center, 133 Peachtree St., Atlanta, GA 30303.

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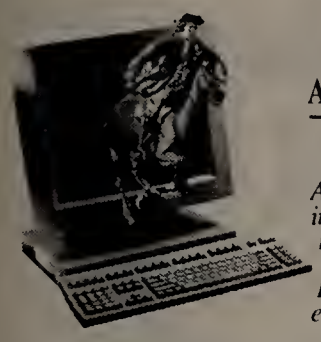

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Systems Analyst - Analyze user reqs, design, develop and implement Info. Mgment Systems on IBM/MVS hardware using DB2, CICS and COBOL. 40 hrs/wk; 8AM-5PM; $54,000/yr. Req. 2 yrs exp. and Bach in Comp.Sci., Math or any Engineering. Employer is a computer consulting firm. Relocation to various client sites for periods of 6 months to 2 years is required. Send resume to Job Service of Florida, Alien Employment Certification, 2312 Gulf to-Bay Boulevard, PO Box C, Clearwater, Florida 34618-4090. Re: Job Order Number FL-1419518.

PROGRAMMER/ANALYST to design, develop, analyze, test, implement, maintain and support Graphical User Interface (GUI) and RDBMS software systems for catalog production process in client-server environment using DEVELOPER 2000, PowerBuilder, Visual Basic, MS-Access, ORACLE, WATCOM, COBOL, C, PRO*C, C++, PL/SOL and SOL Plus under MS-Windows Graphic File libraries, DOS and UNIX operating systems. Require: B.S. in Computer Science or Engineering and two years experience in the described job duties. Salary: $42,000 per year, 8 am to 5 pm, M-F. Apply in person or by resume to: Georgia Department of Labor, Job Order # GA 5978807, 465 Big Shanty Road, Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

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Programmer/Analyst
Participate in all phases of project life-cycle. Analyze and design system specifications. Evaluate user needs and requirements. Plan, develop, test and document business applications software program. Convert data from functional and detail specifications to create programs. Code, test and correct program errors. May install and test program at user site. Monitors program after implementation. Maintains documentation and prepares records and reports. REQUIREMENTS: M.S. in Computer Science, Elec. Eng. or equivalent. Knowledge C, C++, ESOL/C, & Cobol languages; Unix, Informix 4GL, E-SOL, FrameMaker, Teamwork. $55,000/yr. 40 hrs./wk. Must have proof of legal authority to work in the U.S. Send resume in duplicate to Danny Gross, C.P.I., Inc., 7000 Central Parkway, Suite 220, Atlanta, GA. 30328

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Design, develop, implement, analyze and modify sophisticated customized SAP R/3 Materials Management and Production Planning Software Systems for use by large multi-divisional companies. Confer with clients in analyzing operational software procedures, requirements, and products to improve existing software computer systems; and identifying and resolving system-specific issues. Design and modify computer software system and functional specifications as required for various modules. Implement software design changes according to client objectives. Create user documentation requirements, generic user documentation for use by end-users, and module applications systems testing methodology. Other duties and responsibilities include but an not limited to providing high-level technical advice and training to on-site Systems Analysts, Programmers, and professional computer staff; and documenting assigned phases of each aspect of software design. Requirements: B.S. degree in Computer Science or related discipline, and one (1) year work experience in SAP R/3. Must be knowledgeable and proficient in SAP R/3 software systems, and highly specialized computer software systems applications. 40 hrs./wk., Mon.-Fri., 8 a.m.-5 p.m., $120,000/yr. Forward resume to CW-174250, Computerworld, Box 9171, Framingham, MA 01701-9171 or fax to 508-620-7739 referencing CW-174250.

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Computer Systems Analyst - in L.A. - Analyze user reqs, design, develop, implement financial and info. mgment systems using DB2, CICS and COBOLII on IBM/MVS mainframes. Define/ establish DB2 database structure. Use Case Tools. Prepare program specs and systems docs. Test, debug and enhance existing systems & programs. 40 hrs/wk; 9AM-5PM; M-F; $60,000/yr. Req. Bach in Comp. Sci, Math or Any Engin. field and 2 yrs exp. Employer is based in Florida, assignments may vary; current job site is Los Angeles, CA. Send this ad and your resume/letter of qualifications to Job # RL 41122086, P.O. Box 269065, Sacramento, CA 95826-9065.

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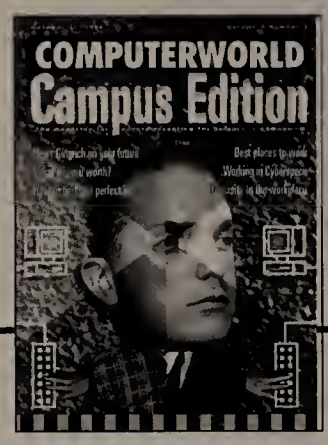

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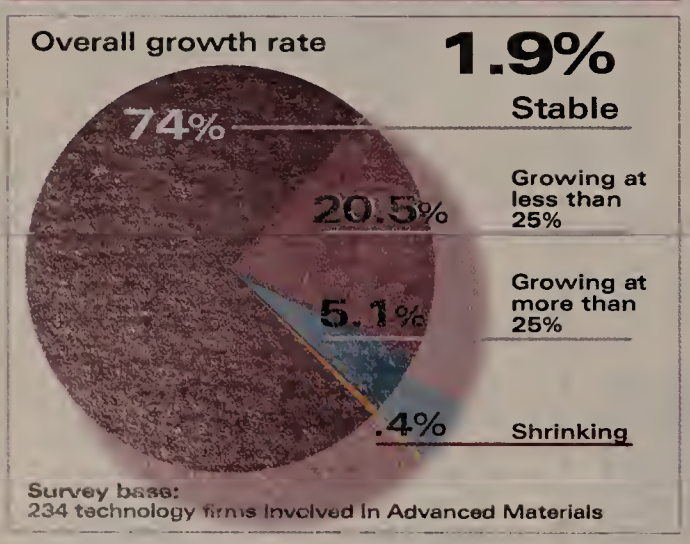

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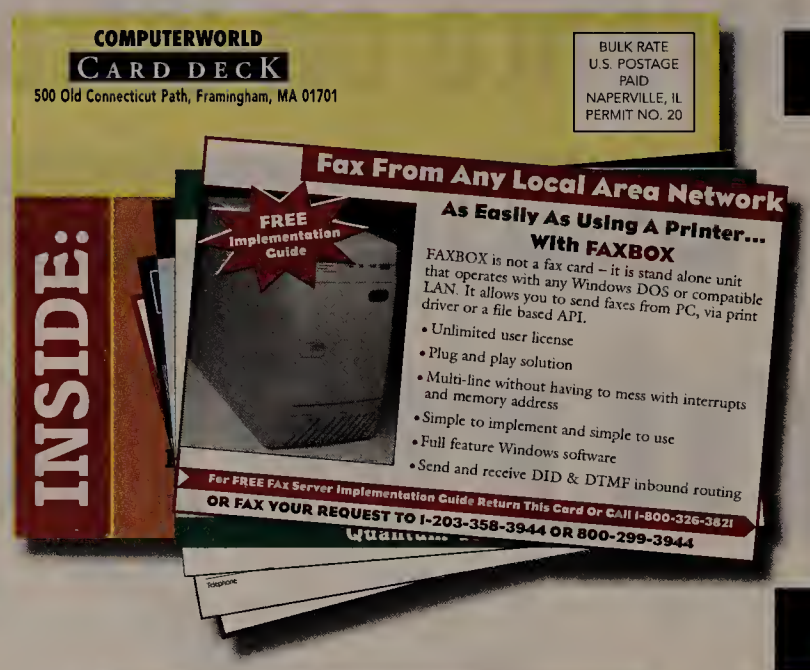
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Marketplace

Holding on against the Win 95/NT wave

TWO YEARS AGO, INDUSTRY PUNDITS wondered whether remote control products would be killed off by "remote node" technology such as that found in Windows 95 and Windows NT.

But remote control software survives. "Over the last year, the remote control market has really reestablished itself as something that is not dying and, in fact, is still the best way to go for some applications," says Kitty Weldon, a senior analyst at The Yankee Group, a market research firm in Boston.

Remote control programs let a user control a remote machine. Remote node programs let users access files on another machine or network by enabling a user's machine to become a virtual node.

One application in which remote control programs have an advantage is in a database query, Weldon says. A user can control a remote machine and let it sift through a database for records and retrieve only the fields that are needed. "It's good because you don't have to pull as much data over the link," Weldon says.

Another advantage of remote control programs is they are generally mature, stable and inexpensive, says Brad Baldwin, director of remote access and internetworking technology research at International Data Corp., a market research firm in Framingham, Mass.

"Remote node solutions like Microsoft NT's Remote Access Server might offer more functionality, but they also come at a much higher cost," Baldwin says. "There are a lot of smaller sites and more casual operations where remote control solutions still are very useful."

Still, there are those who say remote control software is an idea whose time has come — and gone. "It's a niche business that's going away as customers move to client/server and Internet computing," says David Goodtree, director of telecommunication strategies at Forrester Research, Inc. in Cambridge, Mass.

Those who develop remote control products say they're not expecting to go away any time soon. They say their programs have an advantage over Microsoft Corp.'s Windows 95 and Windows NT because Windows 95 and NT users can access files but can't run actual remote applications as they can with remote access packages.

The advantage claimed by remote access software makers is that they let mobile users run applications that aren't loaded on to their machines. They say that remote node programs' users must have local copies of any applications that they want to run. ■

TECHNOLOGY ROUND-UP

By Daniel Lyons

Lyons is a freelance writer in Ann Arbor, Mich.

Remote control software sampler

ReachOut 5.0
Price: $149
Description: A new technology called SmartSend reduces file-transfer time by sending only those portions of a file that have changed. A new scripting feature lets users automate frequently performed operations. ReachOut 5.0 supports Windows 3.1 and Windows 95. A 32-bit release with support for Windows NT is due later this year, after Microsoft releases Windows NT 4.0.

Stac, Inc.
San Diego, Calif.
(800) 522-7822
http://www.stac.com

Remotely Possible/32
Price: $169
Description: Remotely Possible/32 is a 32-bit version of Avalan's popular Windows remote control program, Remotely Possible/Dial, which was designed for Windows 3.1. The new product boasts greater speed. Another key feature of Remotely Possible/32 is its ability to control more than one machine at a time. This makes the product well-suited for group training, officials say.

Avalan Technology, Inc.
Holliston, Mass.
(800) 441-2281
http://www.avalan.com

Carbon Copy for Windows 3.0
Price: $99
Description: Microcom is one of the oldest players in the remote control market. The Windows product has support for TCP/IP and Microsoft's Remote Access Server. Recently, Microcom announced Carbon Copy/Net, an Internet plug-in product that lets users remotely access and use software applications through the Internet and corporate intranets.

Microcom, Inc.
Norwood, Mass.
(617) 551-1000
http://www.microcom.com

Close-Up 6.0
Price: $199
Description: Close-Up 6.0 runs on DOS and Windows 3.1. A 32-bit version designed for Windows 95 is in beta-testing. One differentiator is that Close-Up 6.0 doesn't interfere with Windows WIN.INI settings. Norton-Lambert was one of the pioneers of remote access software and claims to have originated many features that competitors have since adopted, such as support for remote printing, built-in virus checking and password security.

Norton-Lambert Corp.
Santa Barbara, Calif.
(805) 964-6767

PCAnywhere 32
Price: $149
Description: Symantec's PCAnywhere 32 is the 32-bit version of Symantec's market-leading remote access software program. The 32-bit program works with Windows 95 and Windows NT, and PCAnywhere 2.0, its predecessor, runs on Windows 3.1. Symantec still sells PCAnywhere 5.0 for DOS. Symantec touts PCAnywhere as being an "all-in-one" solution that offers remote control and remote node functionality; most of its rivals offer only remote control functionality.

Symantec Corp.
Cupertino, Calif.
(800) 441-7234
http://www.symantec.com

LapLink for Windows 95
Price: $149
Description: LapLink for Windows 95 offers support for 16-bit and 32-bit systems. The product comes bundled with parallel and serial cables. It also supports infrared connections. LapLink supports multiple connections and can support IPX and TCP/IP protocols simultaneously.

Traveling Software, Inc.
Bothell, Wash.
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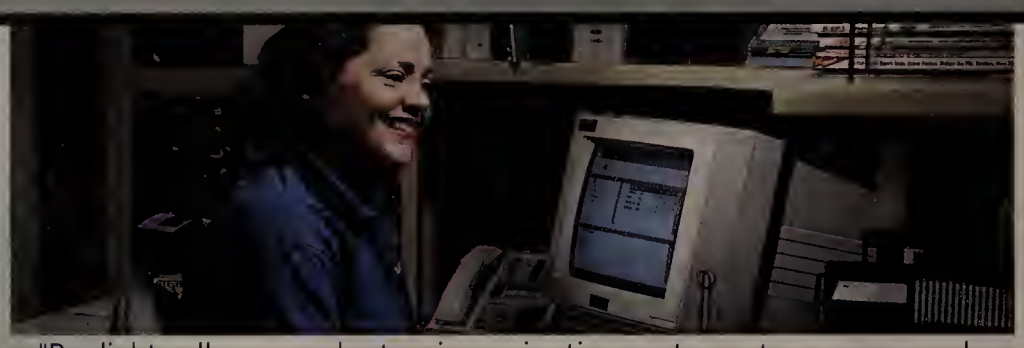

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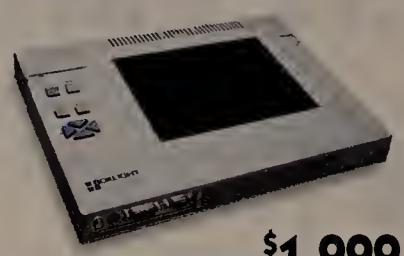

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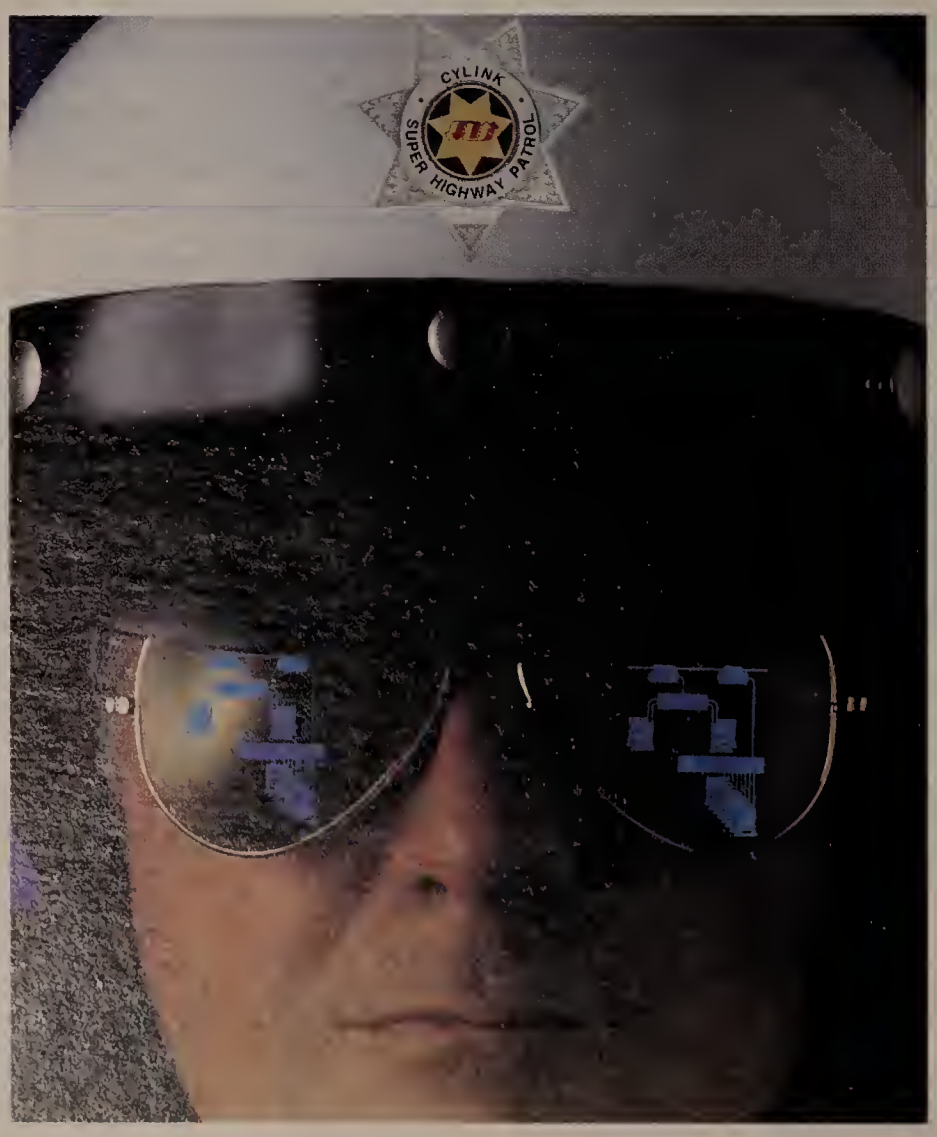

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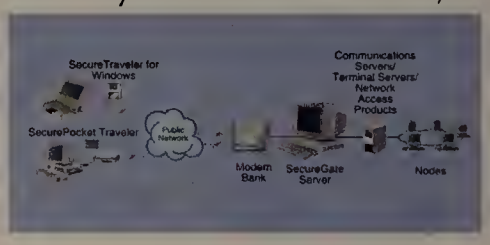

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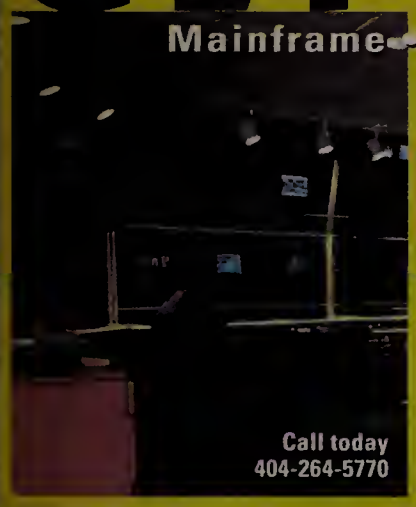

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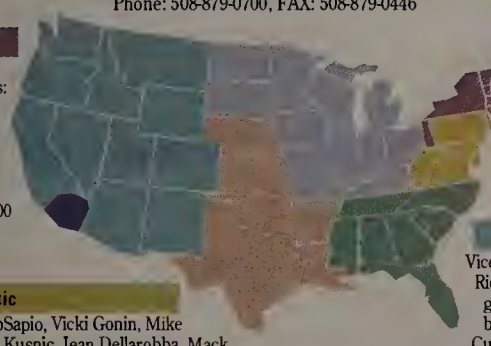

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Finance & Investing

Next week: Big Board lures Nasdaq companies

New funds target the Internet

By Tam Harbert

The first mutual funds based on Internet-related stocks are about to make their debut, providing a new way to participate in the Internet craze.

An Internet mutual fund will give individual investors a way to take part in "the next generation of computing" without having to pick their own Internet stocks, says Jim Greene, vice president of WWW Advisors, Inc., a new investment company in Lexington, Ky., that has filed with the Securities and Exchange Commission (SEC) to launch the WWW Internet Fund. Initial public offerings (IPO) of Internet companies are "virtually impossible to participate in unless you are extremely wealthy," notes Greene, who is co-manager of the fund. And after the IPO, individual investors risk buying these extremely volatile stocks at the wrong time.

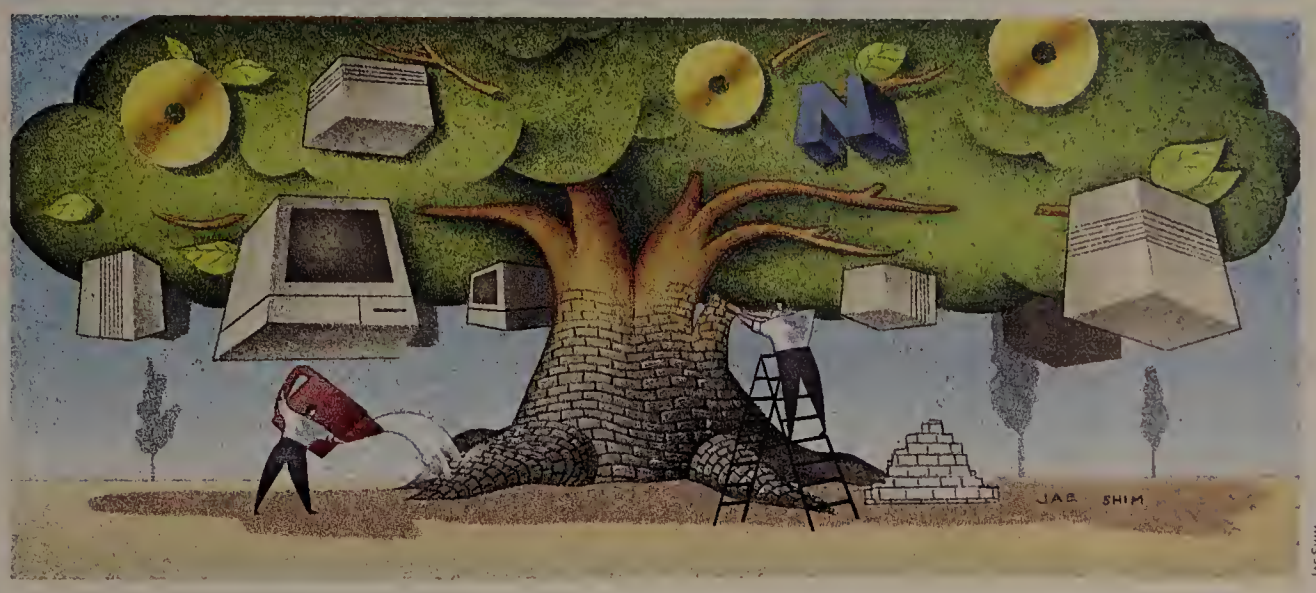
Another start-up, Kinetics Asset Management, Inc. in Tarrytown, N.Y., also filed its Internet Fund, Inc. with the SEC this month. According to its prospectus, the fund seeks to invest in Internet or Internet-related companies in the following categories: Internet access providers, software developers, hardware manufacturers, content developers and publishing companies.

The WWW Internet Fund will initially focus roughly half of its investments in stocks from established technology companies with aggressive Internet strategies, such as Intel Corp. and Sun Microsystems, Inc., according to the fund's managers. Another 25% of the fund will focus on companies that promise to grow quickly with the Internet, such as internetworking vendors Cisco Systems, Inc. and Cabletron Systems, Inc. The remaining 25% of the fund will invest in pure Internet plays, such as Netscape Communications Corp.

WWW Advisors plans to have a home page and offer the fund through new distribution channels as well as the traditional ones, says Lawrence York, president of the company and co-manager of the fund.

But at least one mutual fund watcher is skeptical of the concept.

"It sounds a little gimmicky to me," says Russ Kinnel, technology fund analyst at Morningstar Mutual Funds in Chicago. Investors would be better off buying into established high-technology mutual funds that have a good track record, such as Fidelity Investment Co.'s New Millennium, he says. ■



JAE SHIM

Oracle branches out

By Rosemary Cafasso

When Larry Ellison launched the Network Computer earlier this year, some observers wondered if his company, Oracle Corp. (Nasdaq:ORCL), had gone too far. Sure, diversity is good, but what's a database company doing hawking cheap hardware that hooks up to TVs?

Analysts say that what often appears to be a king-of-all-markets attitude at Oracle is actually a well-crafted expansion strategy. In essence, Oracle has lessened its dependence on database revenue by moving into high-growth areas such as the Internet and client/server applications.

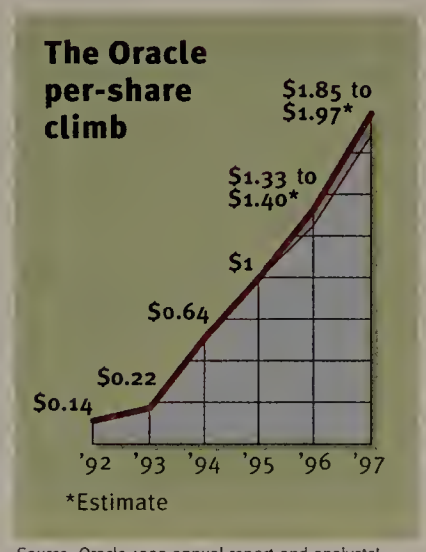
"They've built on a strong foundation, and they haven't tried to go into unrelated areas that required totally different disciplines," according to Jean Orr, a senior analyst at A.G. Edwards & Sons, Inc. in St. Louis.

At first glance, Oracle's product line can appear too broad. The company sells databases for servers and desktops; Internet products; client/server applications for financial and manufacturing operations; electronic-mail systems; gateways; communications products; and systems management utilities.

But a closer look shows that all roads lead back to the Oracle database, analysts say. The client/server applications, for example, are designed only for the Oracle database. And its army of consultants — some 6,000 strong — serve Oracle customers only. Even its E-mail systems were designed to work with the Oracle database.

And that Network Computer? Ray Lane, Oracle's president of worldwide operations, says it is part of what Oracle sees as the database market of the future. The Network Computer launch was Oracle "trying to establish leadership positions on where we are going, not where we already are," he says.

Not all analysts agree that the Network Computer makes sense for Oracle, but they do say the company has a solid plan overall.



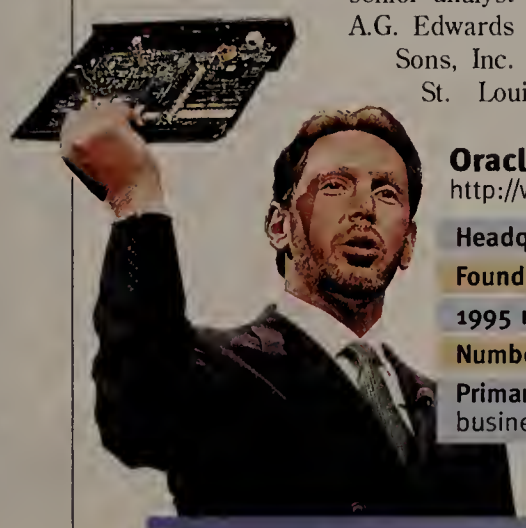
Source: Oracle 1995 annual report and analysts' estimates

"It's business school 101 — know what business you are in," says Stan Dolberg, director of the software strategy service at Forrester Research, Inc. in Cambridge, Mass. "Fundamentally, Oracle is in the database server business, and every endeavor it has pursued relates back to that."

Although recent financial news from several database companies has analysts speculating that the database market could be slowing down, most still think Oracle's strategy should hold up in the long term — even those analysts that don't recommend the stock today.

"Of all the database companies, [Oracle] is one of the best positioned in terms of balance," says Terence Quinn, managing director at Furman Selz, Inc. in New York. ■

Cafasso is a freelance writer in Walpole, Mass.



Oracle Corp.
http://www.oracle.com/

Headquarters: Redwood Shores, Calif.
Founded: 1977
1995 revenue*: $2.96 billion
Number of employees: 21,376 worldwide
Primary products: Database, client/server business applications and development tools

*Fiscal year

Ellison's Network Computer *is part of Oracle's strategy for the database market of the future*

The Week in Stocks

Gainers

PERCENT

General Datacomm Inds.	34.9
Systemsoft Corp.(H)	29.4
ParcPlace Systems Inc.	26.6
Netscape Comm. Corp.	21.8
Micrel Semiconductor Inc.	20.0
Cyrix	19.3
Pinnacle Micro Inc.	18.6
CompUSA Inc.(H)	18.1

Losers

PERCENT

System Software Assoc.	-22.4
MICOM Communications Corp.(H)	-16.1
Cambex Corp.	-15.8
Bachman Info. Systems	-11.3
Control Data Systems Inc.	-10.2
America On-Line	-9.7
CrossComm	-8.8
TriCord Systems(H)	-7.3

DOLLAR

Netscape Comm. Corp.	12.88
Cabletron Systems	11.75
Cascade Communications(H)	8.38
Security Dynamics Tech.(H)	8.00
Systemsoft Corp.(H)	8.00
Cambridge Tech. Partners(H)	7.75
Business Objects(H)	7.13
FORE Systems Inc.(H)	6.75

America On-Line	-5.75
System Software Assoc.	-5.44
Control Data Systems Inc.	-2.56
MICOM Communications Corp.(H)	-2.25
Bay Networks Inc.	-1.88
BMC Software Inc.(H)	-1.38
Computer Horizons(H)	-1.38
Nynex Corp.	-1.25

Industry Almanac

Spyglass offers good views

Several analysts looking at the horizon of the Internet see a good future for **Spyglass, Inc. (Nasdaq:SPYG).**

Unlike many Internet software companies, Spyglass doesn't sell to end users. Instead, the company licenses its Mosaic software to business partners who embed the technology in their own products. Among its most famous licensees is **Microsoft Corp. (Nasdaq:MSFT)**, which has embedded the technology in its Explorer.

Analysts say Spyglass' licensing tack is a good business strategy and distribution model. Mark D'Annolfo, managing director at Adams, Harkness & Hill, Inc. in Boston, has an attractive rating on the stock. Although Spyglass' operating margins will remain at about 20% for a few years, they could eventually reach about 40%, he says.

The company's World Wide Web component business also is growing rapidly; it has increased by more than 100% for each of the past several quarters.

D'Annolfo says he believes the stock could hit $45 to $50 in the next year.

Investors can judge the progress of the company by watching several factors. D'Annolfo suggests that investors track the number of partners the company accumulates — at last count it was 72 — and check to see that Microsoft doesn't contribute much more than 10% of Spyglass' revenue. "Microsoft can go from ally to competitor" quickly, he notes.

The company should also continue to grow its Web component business by more than 100% each quarter. — *Tam Harbert*

View through Spyglass

After it hit a low point this spring, Spyglass' share price is back on the rise

Exch	52-Week Range			May 17 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 3.17%**
COMS	53.63	30.50	3 COM Corp.	49.38	1.38	2.9
AIT	66.88	42.25	AMERITECH Corp.	58.13	-0.88	-1.5
AXE	22.13	15.63	Anixter Intl.	18.50	0.25	1.4
APTS	12.13	2.75	Apertus Tech.	4.50	-0.13	-2.7
T	68.88	49.13	AT & T	61.75	0.63	1.0
ASND	69.88	9.25	Ascend Communications (H)	69.88	4.75	7.3
BNYN	18.63	6.00	Banyan Systems Inc.	8.63	-0.13	-1.4
BAY	50.00	23.88	Bay Networks Inc.	33.00	-1.88	-5.4
BEL	80.38	43.50	Bell Atlantic Corp.	64.13	-0.88	-1.3
BLS	45.88	29.13	Bellsouth Corp.	41.13	0.63	1.5
BRKT	49.00	9.13	Brooktrout Technology	46.00	2.00	4.5
CS	87.75	47.50	Cabletron Systems	85.63	11.75	15.9
CSCC	120.50	20.63	Cascade Communications (H)	115.50	8.38	7.8
CGRM	25.13	12.75	Centigram Communications	17.13	-0.63	-3.5
CSCO	57.13	21.13	Cisco Systems Inc. (H)	56.13	1.13	2.0
CLIX	11.38	4.50	Compression Labs Inc.	6.63	0.38	6.0
CMNT	12.75	4.00	Computer Network Tech.	7.13	0.38	5.6
XCOM	14.50	8.75	CrossComm	10.38	-1.00	-8.8
DIGI	64.00	21.88	DSC Communications	32.00	0.63	2.0
FORE	86.75	25.50	FORE Systems Inc. (H)	86.75	6.75	8.4
GDC	21.88	9.88	General Datacomm Inds.	18.38	4.75	34.9
GSX	42.50	28.00	General Signal Networks	39.38	0.63	1.6
GTE	49.25	31.88	GTE Corp.	45.38	0.38	0.8
LU	35.88	29.75	Lucent Tech.	35.50	1.25	3.6
MCIC	31.13	19.09	MCI Commmunications Corp.	29.13	0.13	0.4
MICM	14.38	5.50	MICOM Communications Corp. (H)	11.75	-2.25	-16.1
MNPI	34.50	9.25	Microcom Inc.	22.56	1.38	6.5
NETM	34.00	9.38	NetManage Inc.	14.75	0.25	1.7
NTRX	8.75	3.63	Netrix Corp.	7.69	0.69	9.8
NCDI	12.00	2.88	Network Computing Devices	3.50	0.50	16.7
NWK	42.00	21.00	Network Equipment Tech.	28.88	1.13	4.1
NETG	47.50	22.88	Network General (H)	47.13	4.00	9.3
NN	71.13	25.00	Newbridge Networks Corp. (H)	71.13	4.63	7.0
NT	53.13	31.50	Northern Telecom Lto. (H)	51.38	0.13	0.2
NOVL	23.25	11.38	Novell Inc.	14.88	0.88	6.3
NYN	59.25	39.25	Nynex Corp.	47.63	-1.25	-2.6
OCTL	26.25	11.25	Octel Communications Corp. (H)	25.50	2.06	8.8
ODSI	43.25	17.00	Optical Data Systems Inc.	24.00	-0.25	-1.0
PAC	35.25	25.63	Pacific Telesis	33.75	-0.38	-1.1
PCTL	44.72	20.75	Picturetel Corp.	37.13	3.50	10.4
PTON	10.75	4.75	Proteon Inc.	5.88	0.13	2.2
RACO	7.88	3.88	Racotek Inc.	5.75	0.00	0.0
RETX	10.25	1.81	Retix (H)	10.25	0.25	2.5
SBC	60.25	42.63	SBC Communications	49.75	-0.75	-1.5
SFA	23.38	11.38	Scientific Atlanta Inc.	19.75	1.00	5.3
SHVA	72.50	18.13	Shiva Corp. (H)	69.00	5.50	8.7
FON	45.50	29.25	Sprint Corp.	43.88	1.75	4.2
SMSC	23.50	12.50	Standard Microsystems Corp.	16.88	0.13	0.7
STRM	56.75	18.00	Stratacom Inc. (H)	55.75	1.00	1.8
TBIT	11.25	2.38	Telebit Corp. (H)	9.50	-0.25	-2.6
USRX	100.50	19.63	US Robotics (H)	94.00	5.38	6.1
USW	48.38	28.38	US West Inc.	33.50	-0.25	-0.7
XIRC	17.50	8.88	Xircom	16.13	0.13	0.8
XYLN	73.50	51.25	Xylan Corp.	68.00	0.50	0.7
PCs and Wnrkstations						**UP 5.98%**
AALR	9.63	5.13	Advanced Logic Research	8.63	1.00	13.1
AAPL	50.13	23.00	Apple Computer Inc.	28.00	1.63	6.2
ASTA	19.13	4.63	AST Research Inc	8.00	1.00	14.3
CPQ	56.75	35.88	Compaq Computer Corp.	47.38	1.13	2.4
DELL	51.75	23.00	Dell Computer Corp. (H)	48.25	3.38	7.5
GATE	40.75	17.38	Gateway 2000 Inc.	37.38	1.25	3.5
HWP	115.38	64.13	Hewlett Packard Co. (H)	108.13	-0.63	-0.6
MUEI	29.88	9.00	Micron International Inc.	14.13	1.13	8.7
NIPNY	75.13	51.00	NEC America	60.00	-0.50	-0.8
SGI	45.63	21.13	Silicon Graphics	29.75	2.13	7.7
SUNW	60.25	19.75	Sun Microsystems Inc. (H)	58.69	2.19	3.9
Large Systems						**UP 4.54%**
AMH	13.63	6.75	Amdahl Corp.	11.63	0.38	3.3
DGN	19.13	7.13	Data General Corp.	14.75	0.38	2.6
DEC	76.50	35.13	Digital Equipment Corp.	56.38	2.38	4.4
IBM	128.88	83.13	IBM	111.13	3.63	3.4
MDCD	19.75	3.00	Meridian Data Inc. (H)	19.00	2.69	16.5
NETF	7.50	3.88	NetFrame	5.00	0.38	8.1
SQNT	25.38	10.13	Sequent Computer Sys.	14.25	0.00	0.0
SEQS	10.00	2.88	Sequoia Systems Inc.	3.75	0.38	11.1
SRA	36.13	23.00	Stratus Computer Inc.	26.88	-0.50	-1.8
TDM	17.50	8.38	Tandem Computers Inc.	13.25	0.25	1.9
TRCD	6.94	2.00	TriCord Systems (H)	6.38	-0.50	-7.3
UIS	13.63	5.50	Unisys Corp.	8.00	0.88	12.3
Software						**UP 4.10%**
ADBE	74.25	30.00	Adobe Systems Inc.	43.38	3.38	8.4
AMSWA	8.75	3.50	American Software Inc.	5.00	-0.13	-2.4
APLX	42.50	8.25	Applix Inc.	35.75	0.25	0.7
ARSW	82.75	28.75	Arbor Software	66.75	2.50	3.9
ACAD	53.00	27.75	Autodesk Inc.	40.75	0.00	0.0
BACH	11.88	4.63	Bachman Info. Systems	7.88	-1.00	-11.3
BGSS	42.00	28.50	BGS Systems Inc.	37.13	2.00	5.7
BMCS	67.75	31.25	BMC Software Inc. (H)	63.50	-1.38	-2.1
BOOL	26.75	19.25	Boole and Babbage (H)	25.75	0.75	3.0
BORL	21.25	10.13	Borland Int'l Inc.	15.75	-0.25	-1.6
BOBJY	55.50	15.25	Business Objects (H)	53.25	7.13	15.4
CYE	27.88	13.13	Cheyenne Software Inc.	22.50	2.75	13.9
COGNF	27.38	8.13	Cognos Inc. (H)	24.25	2.58	11.9
CA	79.25	37.25	Computer Associates (H)	78.31	4.31	5.8
CVN	15.50	4.88	Computervision Corp.	12.25	-0.25	-2.0
CPWR	36.00	15.50	Compuware Corp.	30.00	1.75	6.2
CSRE	28.50	11.13	Comshare Inc.	28.25	1.00	3.7
COSFF	19.50	8.38	Corel Corp.	12.63	1.38	12.2
DWTI	15.75	5.75	Dataware Technologies Inc.	6.75	0.50	8.0
DSLGF	32.25	8.00	Discreet Logic Inc. (L)	9.13	0.50	5.8
FILE	67.00	30.75	Filenet Corp.	53.75	0.50	0.9
DDDDF	8.25	3.50	4th Dimension	5.75	0.00	0.0
FTPS	40.63	8.13	FTP Software Inc.	9.56	0.06	0.7
GSOF	26.00	7.00	Group I Software	10.00	0.00	0.0
GPTA	11.13	4.13	Gupta	4.75	0.00	0.0
HUM	28.88	17.00	Hummingbird Comm. Lto.	23.88	0.00	0.0
HYSW	28.38	9.75	Hyperion Software Corp.	13.63	0.50	3.8
IRIC	18.63	10.00	Information Resources	13.63	-0.31	-2.2
IFMX	36.75	16.88	Informix Corp.	23.00	-0.75	-3.2
INGR	20.13	10.88	Intergraph Corp.	14.00	0.38	2.8
LEAF	12.63	5.38	Interleaf Inc.	7.88	-0.13	-1.6
ISLI	26.25	8.75	Intersolv Inc.	11.13	0.69	6.6
INTU	89.25	29.63	Intuit Inc.	55.00	2.50	4.8
LGWX	22.25	10.88	Logic Works	13.25	-0.88	-6.2
MANU	20.50	9.50	Manugistics Group Inc.	15.00	0.75	5.3
MAPS	40.00	10.00	MapInfo Corp.	16.13	0.38	2.4
MATH	9.25	2.75	MathSoft	7.63	-0.25	-3.2
MCAF	43.88	12.13	McAfee Associates (H)	40.00	0.75	1.9
MENT	22.88	10.88	Mentor Graphics	18.13	1.63	9.8
MIFGY	21.25	8.25	Micro Focus	14.13	0.63	4.6
MGXI	18.50	6.00	Micrografx Inc. (H)	18.50	1.63	9.6
MSFT	120.00	79.88	Microsoft Corp. (H)	116.75	1.75	1.5
ORCL	36.75	21.75	Oracle Corp.	35.38	1.38	4.0
PMTC	45.00	20.88	Parametric Technology (H)	45.00	3.00	7.1

Exch	52-Week Range			May 17 3 PM	Wk Net Change	Wk Pct Change
PARQ	14.50	6.63	ParcPlace Systems Inc.	12.50	2.63	26.6
PSFT	71.25	24.38	Peoplesoft (H)	69.25	0.25	0.4
PTEC	18.75	8.63	Phoenix Technologies	16.50	-0.94	-5.4
PSQL	16.88	3.13	Platinum Software	12.00	0.63	5.5
PLAT	26.00	11.25	Platinum Technology	17.44	2.44	16.3
PRGS	38.00	14.63	Progress Software Corp.	16.63	1.25	8.1
RNBO	26.75	16.63	Rainbow Technologies Inc.	21.50	0.00	0.0
RED8	61.00	29.50	Red Brick Systems Inc.	48.75	0.00	0.0
ROSS	7.75	2.19	Ross Systems	6.00	0.00	0.0
SCOC	12.25	5.50	SCO Inc.	8.88	-0.13	-1.4
SDTI	93.50	17.50	Security Dynamics Tech. (H)	92.50	8.00	9.5
SKEY	51.75	13.38	Softkey International Inc.	29.13	1.38	5.0
SPCO	5.13	2.19	Software Publishing Corp.	2.75	0.31	12.8
SQAX	35.00	16.00	SQA Inc.	32.50	2.25	7.4
SOTA	18.63	6.63	State of the Art (H)	18.00	1.88	11.6
SSW	80.50	33.25	Sterling Software Inc. (H)	77.88	1.88	2.5
SDRC	37.38	10.38	Struct. Dynamics Research	28.75	1.25	4.5
SYBS	39.75	20.88	Sybase Inc.	27.00	0.69	2.6
SYMC	33.25	9.88	Symantec Corp.	17.00	2.25	15.3
SNPS	46.00	23.00	SynOpsys (H)	45.13	1.38	3.1
SSAX	30.63	12.63	System Software Assoc.	18.88	-5.44	-22.4
SYSF	35.25	8.75	Systemsoft Corp. (H)	35.25	8.00	29.4
TRUV	10.13	4.00	Truevision Corp.	9.13	0.50	5.8
VIEW	17.50	9.63	ViewLogic Systems (H)	16.50	-0.25	-1.5
VMRK	21.50	5.75	VMark Software Inc.	12.00	1.50	14.3
WALK	12.75	4.63	Walker Interactive Systems	11.38	0.25	2.2
WALL	23.25	13.00	Wall Data Inc.	21.13	1.50	7.6
WANG	26.13	12.38	Wang Laboratories Inc.	23.75	0.13	0.5
Internet						**UP 5.07%**
AMER	71.00	16.75	America On-Line	53.50	-5.75	-9.7
BBN	48.75	16.50	BBN Corp.	28.50	1.50	5.6
CSRV	35.50	25.00	Compuserve Corp.	27.63	1.88	7.3
LCOS	29.25	14.00	Lycos Inc.	18.00	0.63	3.6
NETC	91.50	19.22	Netcom On-Line	41.25	5.69	16.0
NSCP	87.00	22.88	Netscape Comm. Corp.	72.00	12.88	21.8
PSIX	29.00	6.75	PSINet	18.50	2.75	17.5
QDEK	39.50	6.88	Quarterdeck Corp.	14.38	-0.50	-3.4
RAPT	39.25	22.75	Raptor Systems	31.25	3.00	10.6
SCUR	64.50	19.00	Secure Computing Corp.	25.50	0.50	2.0
SPYG	61.00	13.25	Spyglass Inc.	28.75	-1.00	-3.4
UUNT	98.75	21.75	UUNET Tech.	64.00	0.81	1.3
YHOO	43.00	24.50	Yahoo! Inc.	30.25	-1.00	-3.2
Semiconductors						**UP 7.00%**
AMD	39.25	16.13	Advanced Micro Devices	19.13	0.75	4.1
ADI	30.13	17.50	Analog Devices Inc.	28.63	0.75	2.7
CHPS	15.88	7.88	Chips and Technologies	12.00	1.13	10.3
CRUS	61.13	17.00	Cirrus Logic	24.00	3.25	15.7
CY	27.75	10.00	Cypress Semiconductor Corp.	14.50	1.13	8.4
CYRX	49.75	18.25	Cyrix	34.75	5.63	19.3
INTC	78.38	49.81	Intel Corp.	71.56	2.31	3.3
LSI	62.50	22.50	LSI Logic Corp.	37.75	3.38	9.8
LSCC	43.00	26.38	Lattice Semiconductor	34.50	0.56	1.7
MCRL	32.50	12.25	Micrel Semiconductor Inc.	18.00	3.00	20.0
MU	94.75	27.50	Micron Technology	33.38	0.25	0.8
MOT	82.50	44.75	Motorola Inc.	64.75	4.00	6.6
NSM	33.63	13.50	National Semiconductor	16.13	0.00	0.0
TXN	83.75	42.75	Texas Instruments	54.38	1.38	2.6
TXCC	20.00	7.88	TranSwitch Corp. (H)	19.38	1.75	9.9
VLSI	39.13	10.75	VLSI Technology	19.00	1.88	10.9
WWTK	6.88	1.00	Weitek	1.50	0.06	4.3
WDC	28.00	14.38	Western Digital Corp. (H)	28.00	2.50	9.8
XLNX	55.50	23.25	Xilinx	35.38	0.50	1.4
ZLG	54.13	28.50	Zilog Inc.	36.63	-0.63	-1.7
Peripherals and Subsystems						**UP 2.74%**
APCC	25.88	7.88	American Power Conversion	11.94	-0.31	-2.6
ADPT	61.00	29.38	Adaptec Inc.	58.75	1.25	2.2
CBEX	13.13	5.00	Cambex Corp.	6.00	-1.13	-15.8
CGN	7.25	3.06	Cognitronics Corp.	4.63	-0.31	-6.3
CREAF	14.13	5.75	Creative Technologies Inc.	6.69	-0.31	-4.5
RACE	13.13	3.63	Data Race Inc.	4.50	0.00	0.0
DTM	9.38	4.13	Dataram Corp.	6.31	0.06	1.0
EMC	27.38	13.00	EMC Corp.	21.13	0.25	1.2
EMLX	28.50	6.38	Emulex Corp.	17.25	0.50	3.0
ESCC	29.00	13.00	Evans and Sutherland	26.25	1.75	7.1
EXBT	22.75	10.00	Exabyte (H)	21.38	1.25	6.2
IISLF	4.25	1.50	Intelligent Info. Systems	2.19	0.19	9.4
IOMG	69.88	4.50	Iomega Corp.	66.50	3.38	5.3
IPLSA	7.88	2.50	IPL Systems Inc.	5.88	0.00	0.0
KMAG	37.50	19.25	Komag Inc.	35.75	2.38	7.1
MTSI	31.25	11.25	Micro Touch Systems Inc.	20.25	0.25	1.3
PEAK	34.75	17.25	Peak Technology Group	26.50	0.50	1.9
PNCL	19.75	5.88	Pinnacle Micro Inc.	8.75	1.38	18.6
PTNX	38.75	13.50	Printronix Inc.	24.50	2.19	9.8
AQM	6.75	3.25	QMS Inc.	5.88	-0.25	-4.1
QNTM	28.50	15.88	Quantum Corp.	25.50	2.63	11.5
RDUS	14.00	0.94	Raoius Inc.	4.00	0.00	0.0
SEG	67.75	34.00	Seagate Technology	63.00	6.75	12.0
STK	36.00	21.00	Storage Technology (H)	36.00	3.88	12.1
STLC	8.75	1.25	Streamlogic Corp. (H)	7.38	-0.44	-5.6
TEK	61.88	29.75	Tektronix Inc.	38.38	0.25	0.7
XRX	155.00	109.38	Xerox Corp. (H)	155.00	3.88	2.6
Services						**UP 5.38%**
AMSY	30.63	14.38	American Mgmt. Systems (H)	30.25	1.63	5.7
ANLY	42.50	24.75	Analysts Int'l (H)	40.75	0.75	1.9
AUD	43.38	30.25	Auto Data Processing	38.13	1.13	3.0
CATP	76.00	30.75	Cambridge Tech. Partners (H)	76.00	7.75	11.4
CEN	50.88	31.63	Ceridian Corp.	50.88	2.25	4.6
CDO	28.25	18.88	Comdisco Inc. (H)	27.25	1.25	4.8
CHRZ	54.00	8.00	Computer Horizons (H)	50.00	-1.38	-2.7
CSC	80.75	48.88	Computer Sciences	76.50	4.75	6.6
TSK	31.88	10.75	Computer Task Group	29.00	0.75	2.7
CPU	44.00	12.13	CompUSA Inc. (H)	44.00	6.75	18.1
CDAT	27.50	8.63	Control Data Systems Inc.	22.56	-2.56	-10.2
EGGS	14.25	5.00	Egghead Discount Software	12.13	1.06	9.6
GME	58.00	41.50	General Motors E (EDS)	56.25	2.50	4.7
INAC	22.88	9.13	Inacom Corp.	22.88	2.25	10.9
INEL	14.63	3.50	Intelligent Electronics	10.13	0.50	5.2
KEA	41.25	18.25	Keane Inc. (H)	40.50	0.38	0.9
MSEL	8.38	2.25	Merisel	4.81	0.56	13.2
MICA	15.00	7.25	Microage Inc.	13.13	1.25	10.5
PAYX	70.50	28.75	Paychex	67.25	1.00	1.5
PMS	54.25	42.63	Policy Management Sys.	53.13	0.50	1.0
REY	51.00	28.13	Reynolds and Reynolds (H)	51.00	4.75	10.27
SCBI	27.25	15.75	SCB Computer Tech. Inc. (H)	27.25	1.00	3.81

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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'net box

CONTINUED FROM PAGE 1

manager of architecture at United Air Lines in Elk Grove Village, Ill. "The costs and benefits of client/server still aren't clear, and we haven't even begun to evaluate the Internet. The pricing sounds great, but the closed architecture — Java only — is a major, major concern. And if it would mean two terminals on every desk, we wouldn't want that."

Movies on demand

On the other hand, David Starr, chief information officer at ITT Corp. in New York, said the firm is considering buying 100,000 NCs — one for each Sheraton Hotel room it owns. Guests would be able to view movies on demand and access electronic mail and the Internet from NCs attached to televisions in their rooms.

"We could have done this with a $2,000 PC in each room, but at $500 each, it's a much more attractive business proposition," Starr said.

The most ambitious plans for the NC are those of Webgate Technologies, Inc., a Canadian consortium of 20 corporations that plans to install up to 2 million NCs in phone booth-like enclosures in 37 countries by mid-1997. Two dollars will buy an hour of telephone service, videoconferencing, sending and receiving faxes and E-mail, and cruising the Internet.

"The idea came before the product, but without the NC, the idea wouldn't be affordable on such a universal basis," said Randolph Steepe, Webgate's chairman.

But Tim Monteith, vice president of information systems at Domino's Pizza, Inc. in Ann Arbor, Mich., isn't hot on the NC.

"We have a lot of horsepower and storage on our 1,000 desktops, and I don't see going back to a dumb device as very attractive, at least in the short run," Monteith said.

Chris LeTocq, director of software research at Dataquest, a market research firm in San Jose, Calif., said he sees schools as the biggest NC market.

"The NC needs a high-speed pipe. That won't be in homes any time soon, but the government can legislate it for schools. And the NC's abilities seem to match the needs of students more than those of home users or businesspeople," he said.

IBM promises July ship for software

Software will support intelligent dialer, VisualAge parts

By Sharon Gaudin

OpenDoc has been IBM's sleeping baby, but last week, it began to stir.

IBM announced it is building object-oriented software components and application packs that will be part of the long-touted OpenDoc project.

Object-oriented software

The initial OpenDoc offerings will include objects that range from tables and charts to lists and address files. They will be available by July.

Mark Bilger, director of object technology and market strategy at IBM, said another 50 components will ship by year's end. Those components will provide capabilities such as an intelligent dialer for mobile workers, VisualAge development parts, OpenDoc components and applets written in Sun Microsystems, Inc.'s Java development language.

IBM's announcement has created hope that OpenDoc is finally real after months of hype. OpenDoc is an industry-standard architecture for plugging together software components to create distributed applications. It was first announced three years ago by a coalition of vendors, including IBM, Novell, Inc. and Apple Computer, Inc. OpenDoc's main competitor is Microsoft Corp.'s ActiveX.

"I just want someone to get some components out to me quick," said David Bowser, distributed information architect at Cummins Engine Co. in Ohio, a $5 billion business that is the largest maker of 200- to 2,000-horsepower diesel engines. "My confidence has gone way up with this kind of progress."

Bowser said he has been building his own components but would rather buy them. "Building a new tool takes maybe four man-years of work. Our goal is to be able to do that in two hours by assembling prebuilt components."

David Kelly, director of applications strategies service at Hurwitz Group, Inc. in Newton, Mass., said IBM's announcement will trigger a resurgence of OpenDoc activity.

GM CIO search under way

CONTINUED FROM PAGE 1

new CIO will be under. While building consensus about technology strategy within the company, the new IS executive also is expected to be "a tough business negotiator with outside suppliers," according to the job requirements.

The search for its first CIO was triggered by GM's upcoming spin-off of EDS, the $12.4 billion outsourcing firm that has filled almost all of GM's information systems needs since GM acquired it in 1984. GM's dream CIO was outlined in a list of job requirements obtained by *Computerworld* after being circulated by a search firm retained by GM.

While certainly ambitious, the job specification is also right on target, one source said.

"That's perfect," said a member of GM's IS organization who declined to be identified. "The different divisions have been highly autonomous and allowed to go their own way. It [will] take somebody who can be a consensus person to get them to all come together."

Indeed, GM's IS culture may call for more persuasion than direct pressure. "We're very much more coordinators than we are doers," the GM insider said. That entails managing "the efforts of various resources" such as EDS.

One problem for the new CIO is that often, EDS will be the only vendor the CIO can use. Under terms of the proposed spin-off, GM must buy all but $60 million of its IS services from EDS for the next two years, an EDS spokesman said. That is a small fraction of the $3.9 billion GM spent with EDS last year. If the spin-off goes through as expected by the end of next month, GM must buy at least 85% of its information services from EDS through 2000 and at least 75% for six years after that.

For its part, GM has built in to the deal unspecified price cuts on some EDS-supplied "information processing activities and communications services," according to a GM statement issued last month. EDS has predicted the price cuts could shave up to 14 cents per share from its earnings this year.

Usually, getting a lower price from an outsourcer is good news for a CIO. But it could be more complicated for GM's CIO because lower earnings for EDS could drive down the value of EDS stock held by GM pension funds. That in turn could require GM to make special payments to those funds in compensation.

The CIO won't be responsible for the pension fund, but Simonetti said GM's contracts with EDS "are important to the vitality of [EDS]. And that's probably why there's a phase-in" of GM's ability to shift business to EDS' competitors.

GM is looking for a CIO who can . . .

"[build] consensus regarding technology strategy throughout the corporation, while also being a tough business negotiator with outside suppliers."

". . . [see] new ways for realigning processes for greater effectiveness."

"be a pragmatist focused on implementation [of information technology] rather than creation of the perfect vision."

Source: General Motors' job requirements as obtained by *Computerworld*

Dilbert on management. See page 80.

Informix cuts back 'datablade' time

By Dan Richman

Informix Software, Inc. users will soon have an easier way to create the "datablades" necessary for Informix databases to handle nonnumerical information.

The new datablades development kit, which has a graphical user interface (GUI) and generates C and SQL code, will ship by June 1 and will cost less than $200, sources said.

The software is critical to Informix's plans to enlarge the scope of its relational database management system. Datablades are Informix's name for groups of functions, data types and access methods that let users load, query, add and otherwise manipulate nontraditional data.

Limits

Without datablades, Informix can't handle nontraditional data, which includes foreign currencies, foreign languages, video, audio and financial instruments.

The new version of the datablade developers' kit, which hasn't been named or given a version number yet, will create datablades that work with the Illustra multimedia relational DBMS and its successor, the Universal Server, which will ship by year's end.

Datablades written with the current kit can run on the Universal Server through a utility that is part of the new kit. Once datablades have been written for their data, users can write applications that invoke the datablade. That is far simpler than dealing directly with the data, users said.

"Writing datablades is difficult and time-consuming. But once you have them, writing applications that use the data is much easier," said a Wall Street executive who requested anonymity. "We could definitely use a GUI kit for writing them."

But in the future, most datablades will be written by independent software vendors. For example, Verity, Inc., a vendor in Mountain View, Calif., is preparing a $995 datablade it said will let users manipulate text. It will be released by Sept. 1.

Informix expects hundreds of other vendors to use the new kit to write datablades, an Informix official said.

Intranet expertise is hard (sigh) to find

Charles Babcock

I've been trying to track a bunch of new technologies — stuff such as JavaScript, LDAP, ADSL and AnyLAN SAAB, which is a code object that bounces between CORBA ORBs like a pinball high on mescaline.

Imagine my surprise when my boss told me I was barking up the wrong buzzword. I needed to get with it on the intranet, he said.

"What's an intranet?" I asked.

"It's the latest thing. It's the coming thing. It's like now," he told me, and I knew then I had my marching orders.

Fortunately, I was headed to the Electronic Messaging Association's annual conference in Anaheim, Calif., and its proceedings included two sessions on intranets.

I arrived at one of them a few minutes late and found myself cooling my heels at the door. The hall was packed, and the fire marshal wouldn't let another person in until someone came out.

This turned out to be a blessing in disguise because I got to talk to the man in line ahead of me, a tall figure in a Brooks Brothers suit. He had just assembled a Web server for a California aerospace company, and he knew all about intranets.

That's great, I thought, here is someone who can offer some help.

You have an intranet when your application goes out and connects to the Internet, he explained.

In the old days, I pointed out, we had clients that sought out remote servers on the corporate wide-area network, drawing down information. How is the intranet different?

"You know it's an intranet application when it has already been downsized and passed through the client/server nebula. This causes the application to generate its own red-light shift," he explained.

"Is that because it's moving so slowly?" I asked dimly.

"Exactly," he said, running a hand through his chestnut, blow-dried hair.

I asked if clients access the 'net from an existing LAN or do they have to go over TCP/IP?

"Well, you send an HTTP request up the Webramp via the IP/IPX protocol through a routed gateway to the POP-3 server. There it can be picked up by the ISDN interface, given its IMAP4 specifications and an HTML page and launched back to the end user."

Wow, I thought, this guy really knows his stuff. He had all the pieces fitting together in a way that I could barely comprehend.

"And CGI, don't forget CGI," I said.

"Yeah." he said resentfully, as if I had trespassed on his turf.

"Intranet servers are just like the World Wide Web," he assured me. "That's why top management buys into intranets. It knows they'll work."

"Are data warehouses part of the intranet?"

"Yes, if they aren't there already, it's just a matter of time," he said, as if the topic brooked no further discussion.

"How about those new Windows NT servers running the SAP applications in accounting. Are they part of the intranet?" I asked.

"Everybody is part of the intranet. It is multicultural and non-exclusionary," he said.

"Really?" I said, in disbelief.

"We achieved a complete fusion of all elements of the enterprise around our short list of standards. I was able to open up everything, with no performance penalties. It took a lot of work," he said, fingering the little diamond stud in his ear lobe, "but we got it done in the first month of the contract."

"What did you do before you became a champion intranet developer?" I asked.

He had grown tired of our wait outside the session door and was packing up his leather valise. "I was a consultant on client/server," he said. I started to press him on why client/server had ended up costing so much when it was supposed to save money, but he waved me off. "I'll get back to you with E-mail," he said as he headed for the exit.

Client/server was made to work — when it did work — by skilled IS organizations, not proselytizers. If it had been otherwise, what was allegedly a solution would have turned into a whole new set of problems — and it sometimes did.

Rolling today's client/server systems over into an intranet will require lots of decisions about what to keep and what to throw away, I thought. In that process, only IS is likely to know what is in the company's long-range interest, and it is going to have to use its own judgment rather than rely on the opinions of self-proclaimed experts.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

The Meta View

"You know it's an intranet application when it has passed through the client/server nebula."

Inside Lines

Mission implausible?

Apple CEO Gilbert Amelio and movie star Tom Cruise are both top guns — Cruise on celluloid and Amelio in real life. Amelio is the only Apple CEO to have landed a fighter plane on an aircraft carrier. The two also share a genuine affection for the Macintosh. After reading about Apple's woes, Cruise insisted that Apple products — including the now-recalled PowerBook 5300 — be used in his *Mission: Impossible* movie due out this week. Amelio's keynote speech at last week's Apple Worldwide Developers Conference was accompanied by a digitally enhanced photograph from the movie that melded Amelio's head on Cruise's body. The title read: "Mission Unstoppable."

Web tamers on the way

BMC, big man in data storage, plans to announce a set of intranet management tools next month, according to a source close to the Houston software maker. The products will let webmasters track and correct problems by using Web server software from a PC. Meanwhile, Philippe Kahn's Starfish Software is expected to roll out at PC Expo next month Web utilities to monitor users' online time and administer Web sites.

Web management to the Max

San Francisco-based MaxInfo plans to introduce a centralized manager for corporate intranets and Web sites next month at PC Expo. Twelve sites are beta-testing IntraChange, which helps manage Web content, security and services. IntraChange is due to ship this fall.

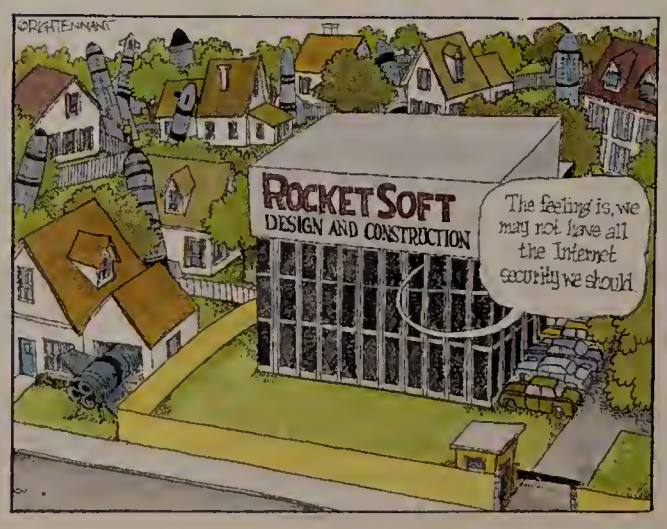
Milking the Mac . . .

The Franklin Mint does it, so why not Apple? They offer special collector editions of everything. So to cash in, Apple will commemorate its 20th anniversary by offering a special limited edition Macintosh, offering only 20,000 of them. No further details were available, but let's hope it isn't made out of chinaware — the traditional gift for 20th anniversaries.

Banyan exec makes like a tree

John Curtis, senior vice president of Banyan Systems enterprise network division, is leaving the company after a year. A Banyan spokesperson confirmed Curtis has "already relinquished his duties but is staying on for a few days to smooth the transition." Banyan Chairman, President and CEO Dave Mahoney will assume Curtis' duties.

The 5th Wave by Rich Tennant



Cyrix to ship multimedia chip

Cyrix next year plans to offer PC microprocessors that mimic the features of Intel's forthcoming multimedia Pentiums. Cyrix, in Richardson, Texas, currently offers the 6x86, a Pentium-class processor that competes with Intel's designs.

IBM first with 'net device

IBM plans to ship a Network Computer (NC) for corporate use by year's end. IBM's diskless, monitorless Internet-access device is the first to be announced by any of the vendors lined up behind the NC initiative, which is led by Oracle CEO Larry Ellison.

Outsourcing market heats up

Outsourcing is booming. There were $12 billion in new outsourcing deals announced in the first four months of 1996, compared with $20 billion for all of 1995, said Merrill Lynch analyst Stephen T. McClellan. And several big deals are yet to come, including Alexander & Alexander, Aetna Life and Casualty and Du Pont. Stay tuned.

A memo at The Washington Post *last week warned that "there are numerous computer viruses making their way through the newsroom this spring." The most prevalent is the Word.concept macro virus, it said. The memo went on to warn of these "potential" viruses: Hillary Clinton virus — files disappear, only to reappear mysteriously a year later in another directory; PBS virus — your programs stop every few minutes to ask for money; Ollie North virus — it turns your printer into a paper shredder. If you've heard of any strange viruses, news editor Tish Keefe wants to know about it. She can be reached at (508) 820-8183 or via the Internet at patricia_keefe@cw.com.*

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Intr@net '96 Conference

This June marks the first Computerworld Intr@net Conference, held June 24-26 in San Jose, California. Presented by Computerworld, Inc. and sponsored by Netscape, Compaq, Informix and Sun Microsystems, Intr@net '96 is by invitation only to top CIOs and vice presidents of IS. The conference will focus on internal Webs and the corporate enterprise and is designed as an interactive forum in which these attendees and industry leaders can discuss and formulate their agendas for the corporate growth of intranets.

While the Internet continues to grab the attention of the daily media, the business world is embracing this technology for *intranet* use. By 1999 International Data Corporation (IDC) projects that intranet access in business will outpace corporate Internet access by more than two to one. IDC states that, "if WWW, HTML and other Internet-based applications are widely adopted and used for internal communications and business applications, then IT customers and vendors face market shifts as radical and challenging as the adoption of PCs and PC Lans in the late 80s." The implications of these market shifts and more are why Computerworld, Inc. is launching this type of conference.

Are Your Top Customers Attending?

Some of the CIOs already slated to attend this conference include those from Chrysler Corp., Deluxe Corp., Johnson & Johnson, Liberty Mutual, MCA/ Universal, MGM/ United Artists, United Parcel Service and the World Bank. Top IS decision makers from these leading companies will be setting the agenda for growth of the corporate intranet.

Conference participation is strictly limited, so make sure your top customers are there.

CIOs interested in attending Computerworld's Intr@net '96 Conference should call:

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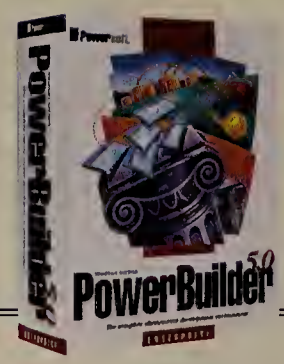

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